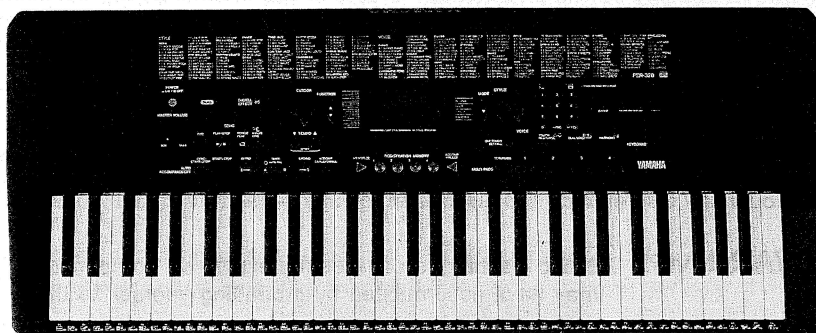


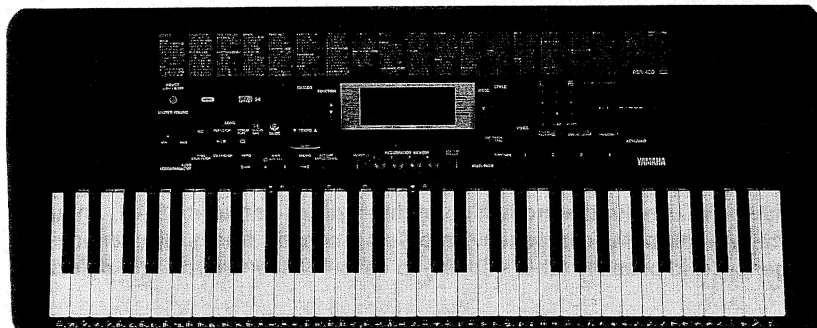
# PORTATONE

## PSR-320/PSR-420

### SERVICE MANUAL



PSR-320



PSR-420

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## IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

## WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ SPECIFICATIONS

Keyboards:

61 standard-size keys (C1-C6) with touch response.

Display:

Large multi-function LCD display

Setup:

Power: ON/OFF

Master Volume: MIN-MAX

Control & Ten Keys:

CURSOR ▲▼◀▶, FUNCTION ▲▼, MODE ▼, [0]–[9],  
[+]/YES], [–]/NO]

Cartridge Slot

Keyboard Guide Lamps (PSR-420 only)

Demo:

Voice Demo: 8 Songs

Style Demo: 8 Songs

Mode:

NORMAL, SPLIT, SINGLE, FINGERED

Voice:

AWM128 voices +8 Keyboard Percussion Kits

Polyphony: 28

Voice Set

Split Voice: Volume, Octave, Pan, Split Point

Dual Voice: Volume, Octave, Pan

Touch Response: Touch Sensitivity

Harmony: 5 types

Others: Keyboard Volume, Octave, Pan

Auto Accompaniment:

100 styles

Accomp Track: RHYTHM, BASS, CHORD, PAD, PHRASE

ACCOMP LARGE/SMALL

Accomp Track Settings: ON/OFF, VOICE, VOLUME

Accompaniment Control: SYNC-START/STOP, START/

STOP, INTRO, MAIN A/B (AUTO FILL), ENDING

Tempo: 32–280

Beat Indicator

Fingering (FINGERED Mode): Normal, Full

Accompaniment Volume

Split Point (Accomp Mode)

One Touch Setting

Overall Controls:

Transpose

Metronome

Lamp (PSR-420 only)

Digital Effect:

4 types (Ambience/Ensemble/Ambience+Ensemble/Sus-  
tain)

Registration Memory:

8 Regist Bank: 1–4

ACCOMP FREEZE

Multi Pads:

14 Multi Pad Kits (PSR-420)

11 Multi Pad Kits (PSR-320)

4 Pads+Terminate

SONG:

Song: 3 songs

Recording Tracks: ACCOMP, MELODY 1, 2

Edit: Volume, Voice (MELODY TRACK), Song Clear

Minus One: 3 Modes

Minus One Right-hand Channel, Minus One Left-hand  
Channel

Repeat

Guide (PSR-420 only)

MIDI:

Remote Channel, Keyboard Out, Song Out, Accompani-  
ment Out, External Clock, Local Control, Initial Data Send,

Bulk Data Send

Auxiliary Jacks:

DC IN 10-12V, PHONES, SUSTAIN, MIDI IN/OUT

Amplifiers:

6.0 W + 6.0 W (when using PA-5B AC power adaptor)

4.5 W + 4.5 W (when using batteries)

Phones output: 100Ω ±5% Impedance

Speakers:

12cm (4-3/4") x 2

Power Consumption:

26 W (when using PA-5B AC power adaptor)

Batteries:

Six SUM-1, "D" size, R-20 or equivalent batteries

Rated Voltage:

DC 10-12V

Dimensions (W x D x H):

933 x 372 x 127mm (36-3/4" x 14-5/8" x 5")

Weight:

6.0 kg (13.2 lbs.) excluding batteries

Supplied Accessories:

• Music Cartridge

• Music Stand

• Owner's Manual

Optional Accessories:

• Headphones HPE-3, HPE-150

• AC Power Adaptor PA-5, PA-5B, PA-5C

• Foot switch FC4, FC5

• Music Cartridge

Output Level

–12.5 dBm ± 2dB

When pressing C3, D3, E3, F3, G3, A3 and B3 keys  
selecting VOICE 19.

30Ω load, Touch response: off, Analog volume: max,

Digital volume: default value

• Voice & Polyphony List

The PSR-320/420 can play up to 28 individual notes at the same time (i.e. it has a maximum "polyphony" of 28). This number includes all voices used: dual, split, auto accompaniment, song, and multi pads. If the maximum polyphony of the PSR-320/420 is exceeded, the excess notes will be truncated (they will not sound).

Another feature affecting polyphony is the fact that some PSR-320/420 voices actually use two voices at once, as shown in the voice list below. The effective maximum polyphony of the PSR-320/420 is correspondingly reduced when these voices are used.

NOTES

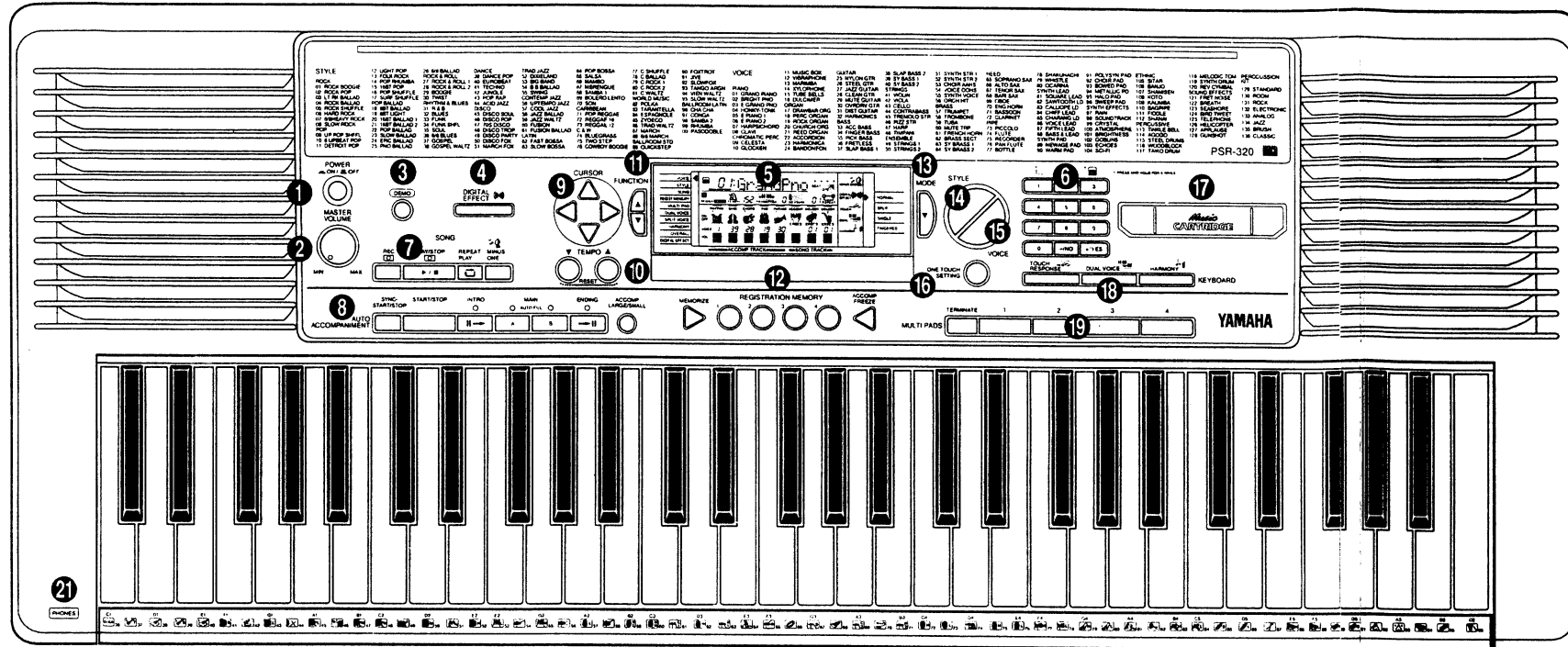
• The voice list includes the MIDI program numbers that control each voice when the PSR-320/420 is played from an external MIDI device.

• The following voices use only one voice in the indicated ranges: 46 (Pizzicato Strings): all notes below C#2 and above F5. 110 (Bagpipe): all notes above A#2.

Voice Number	MIDI Program Number	Voice Name	Number of Voices Used	Voice Number	MIDI Program Number	Voice Name	Number of Voices Used	Voice Number	MIDI Program Number	Voice Name	Number of Voices Used
Piano				45	44	Tremolo Strings	2	Synth Pad			
01	0	Acoustic Grand Piano	1	46	45	Pizzicato Strings	2	89	88	Pad 1 (new age)	2
02	1	Bright Acoustic Piano	1	47	46	Orchestral Harp	1	90	89	Pad 2 (warm)	2
03	2	Electric Grand Piano	2	48	47	Timpani	1	91	90	Pad 3 (polysynth)	2
04	3	Honky-tonk Piano	2	Ensemble				92	91	Pad 4 (choir)	2
05	4	Electric Piano 1	2	49	48	Strings Ensemble 1	1	93	92	Pad 5 (bowed)	2
06	5	Electric Piano 2	2	50	49	Strings Ensemble 2	1	94	93	Pad 6 (metallic)	2
07	6	Harpsichord	1	51	50	Synth Strings 1	2	95	94	Pad 7 (halo)	2
08	7	Clavi	1	52	51	Synth Strings 2	2	96	95	Pad 8 (sweep)	2
Chromatic Percussion				53	52	Choir Aahs	2	Synth Effects			
09	8	Celesta	1	54	53	Voice Oohs	1	97	96	FX 1 (rain)	2
10	9	Glockenspiel	1	55	54	Synth Voice	1	98	97	FX 2 (soundtrack)	2
11	10	Music Box	2	56	55	Orchestra Hit	1	99	98	FX 3 (crystal)	2
12	11	Vibraphone	1	Brass				100	99	FX 4 (atmosphere)	2
13	12	Marimba	1	57	56	Trumpet	1	101	100	FX 5 (brightness)	2
14	13	Xylophone	1	58	57	Trombone	1	102	101	FX 6 (goblins)	2
15	14	Tubular Bells	1	59	58	Tuba	1	103	102	FX 7 (echoes)	2
16	15	Dulcimer	2	60	59	Muted Trumpet	1	104	103	FX 8 (sci-fi)	2
Organ				61	60	French Horn	1	Ethnic			
17	16	Drawbar Organ	2	62	61	Brass Section	1	105	104	Sitar	1
18	17	Percussive Organ	2	63	62	Synth Brass 1	2	106	105	Banjo	1
19	18	Rock Organ	2	64	63	Synth Brass 2	2	107	106	Shamisen	1
20	19	Church Organ	2	Reed				108	107	Koto	1
21	20	Reed Organ	1	65	64	Soprano Sax	1	109	108	Kalimba	1
22	21	Accordion	2	66	65	Alto Sax	1	110	109	Bagpipe	2
23	22	Harmonica	1	67	66	Tenor Sax	1	111	110	Fiddle	1
24	23	Tango Accordion	2	68	67	Baritone Sax	1	112	111	Shanai	1
Guitar				69	68	Oboe	1	Percussive			
25	24	Acoustic Guitar (nylon)	1	70	69	English Horn	1	113	112	Tinkle Bell	2
26	25	Acoustic Guitar (steel)	1	71	70	Bassoon	1	114	113	Agogo	1
27	26	Electric Guitar (jazz)	1	72	71	Clarinet	1	115	114	Steel Drums	2
28	27	Electric Guitar (clean)	2	Pipe				116	115	Woodblock	1
29	28	Electric Guitar (muted)	1	73	72	Piccolo	1	117	116	Taiko Drum	1
30	29	Overdriven Guitar	1	74	73	Flute	1	118	117	Melodic Tom	1
31	30	Distortion Guitar	1	75	74	Recorder	1	119	118	Synth Drum	1
32	31	Guitar Harmonics	1	76	75	Pan Flute	1	120	119	Reverse Cymbal	1
Bass				77	76	Blown Bottle	2	Sound Effects			
33	32	Acoustic Bass	1	78	77	Shakuhachi	1	121	120	Guitar Fret Noise	1
34	33	Electric Bass (finger)	1	79	78	Whistle	1	122	121	Breath Noise	1
35	34	Electric Bass (pick)	1	80	79	Ocarina	1	123	122	Seashore	2
36	35	Fretless Bass	1	Synth Lead				124	123	Bird Tweet	2
37	36	Slap Bass 1	1	81	80	Lead 1 (square)	2	125	124	Telephone Ring	1
38	37	Slap Bass 2	1	82	81	Lead 2 (sawtooth)	2	126	125	Helicopter	2
39	38	Synth Bass 1	1	83	82	Lead 3 (calliope)	2	127	126	Applause	2
40	39	Synth Bass 2	1	84	83	Lead 4 (chiff)	2	128	127	Gunshot	1
Strings				85	84	Lead 5 (charang)	2				
41	40	Violin	1	86	85	Lead 6 (voice)	2				
42	41	Viola	1	87	86	Lead 7 (fifth)	2				
43	42	Cello	1	88	87	Lead 8 (bass+Lead)	2				
44	43	Contrabass	1								

## ■ PANEL LAYOUT

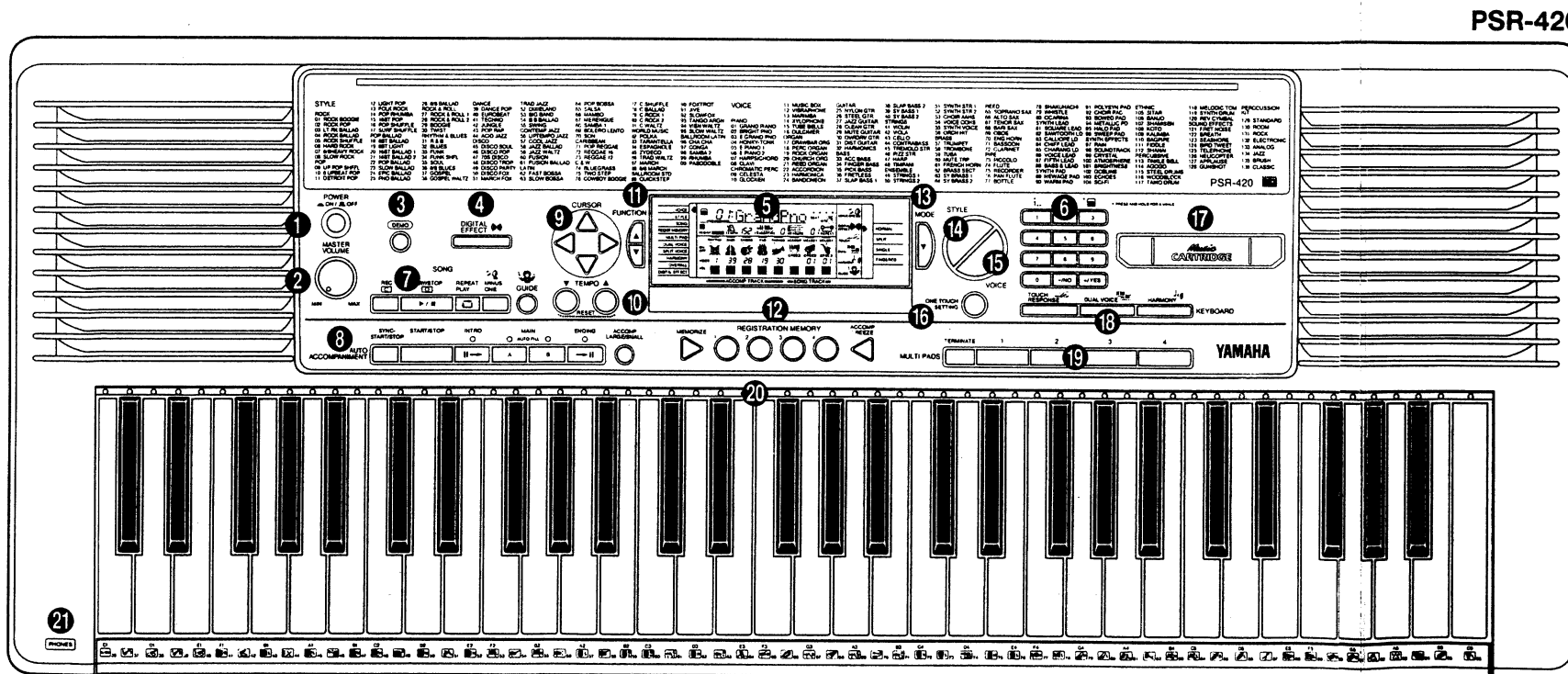
### • Top Panel



PSR-320

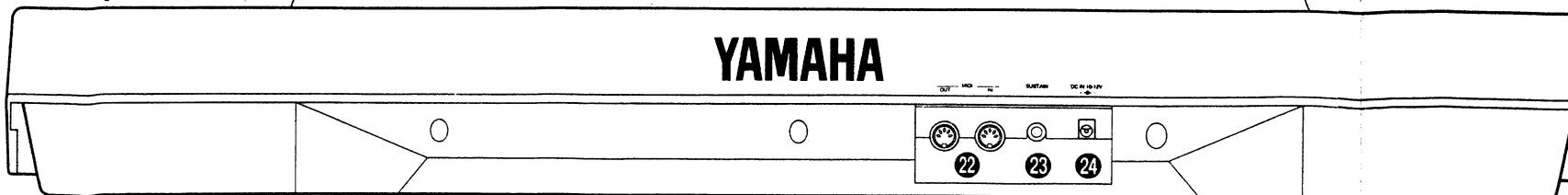
### • Top Panel

- ❶ POWER Switch
- ❷ MASTER VOLUME Control
- ❸ DEMO Button
- ❹ DIGITAL EFFECT Button
- ❺ LCD Panel
- ❻ Number [0]~[9] and [+YES], [-/NO] Buttons
- ❼ SONG Section
  - REC Button
  - PLAY/STOP Button
  - REPEAT PLAY Button
  - MINUS ONE Button
  - GUIDE Button (PSR-420 only)
- ❽ AUTO ACCOMPANIMENT Section
  - SYNC-START/STOP Button
  - START/STOP Button
  - INTRO Button
  - MAIN A Button
  - MAIN B Button
  - ENDING Button
  - ACCOMP LARGE/SMALL Button
- ❾ CURSOR ▲, ▼, ◀, ▶ Buttons
- ❿ TEMPO ▲, ▼ Buttons
- ⓫ FUNCTION ▲, ▼ Buttons
- ⓬ REGISTRATION MEMORY Section
  - MEMORIZE Button
  - 1~4 Buttons
  - ACCOMP FREEZE Button
- ⓭ MODE ▼ Button
- ⓮ STYLE Button
- ⓯ VOICE Button
- ⓰ ONE TOUCH SETTING Button
- ⓱ Music CARTRIDGE Slot
- ⓲ KEYBOARD Section
  - TOUCH RESPONSE Button
  - DUAL VOICE Button
  - HARMONY Button
- ⓳ MULTI PADS Section
  - MULTI PADS 1~4
  - TERMINATE Button
- ⓴ Keyboard Guide Lamps (PSR-420 only)
- ⓵ PHONES Jack



PSR-420

### • Rear panel

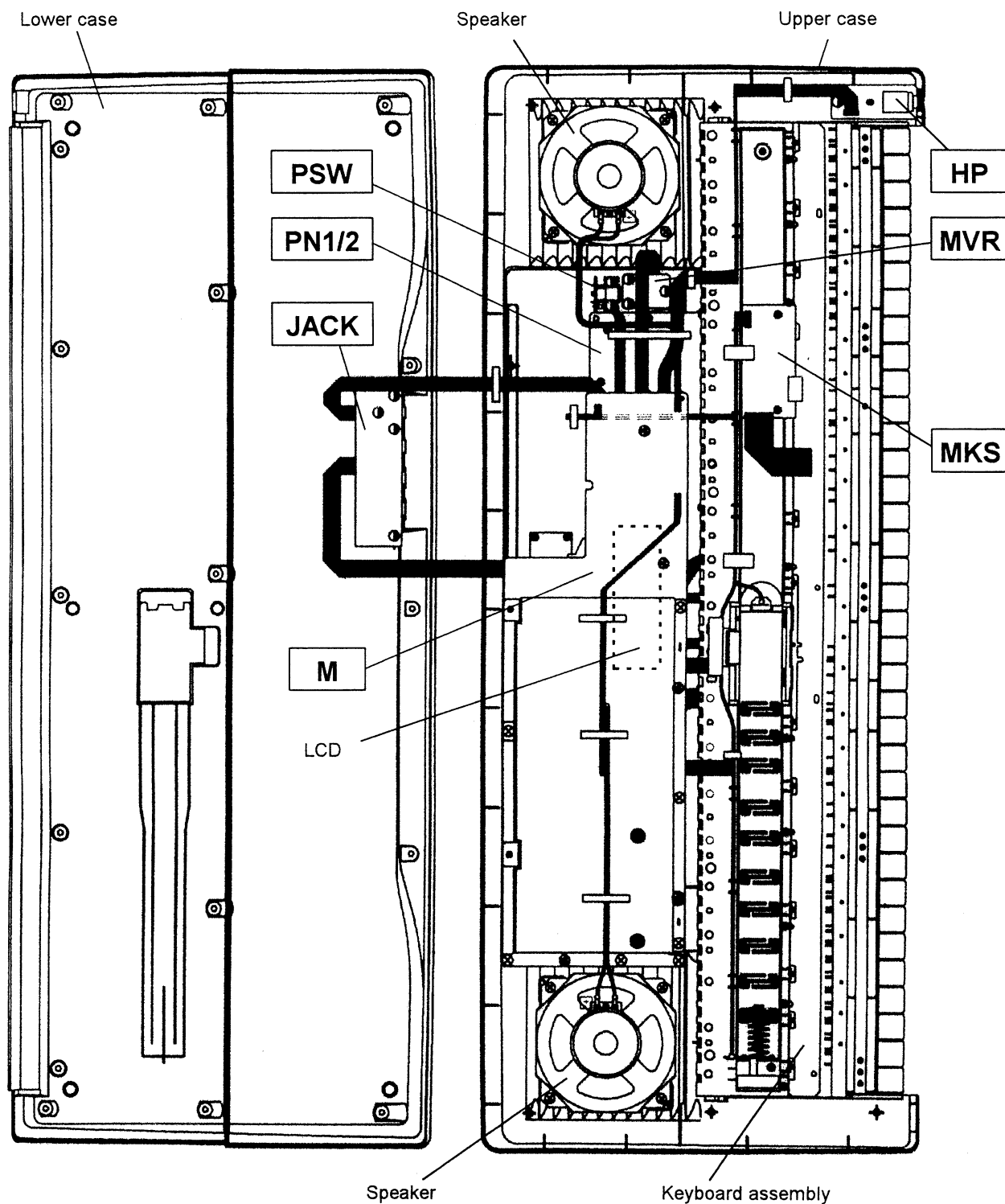


### • Rear Panel

- ❷❷ MIDI OUT and IN Connectors
- ❷❸ SUSTAIN Jack
- ❷❹ DC IN 10-12V Jack

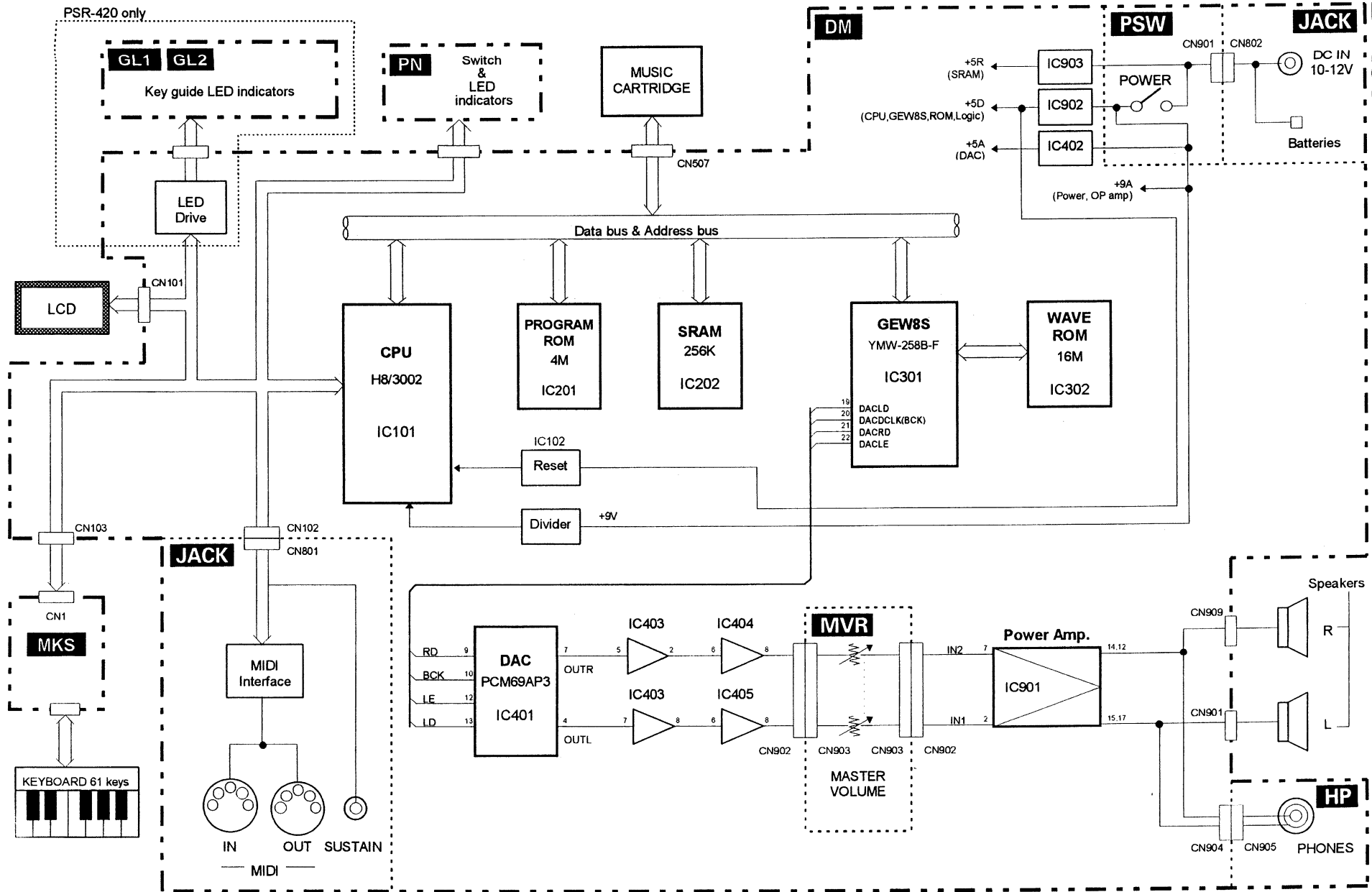


## ■ CIRCUIT BOARD LAYOUT



※ The PN2/2 circuit board is used for retaining the LCD.

## BLOCK DIAGRAM

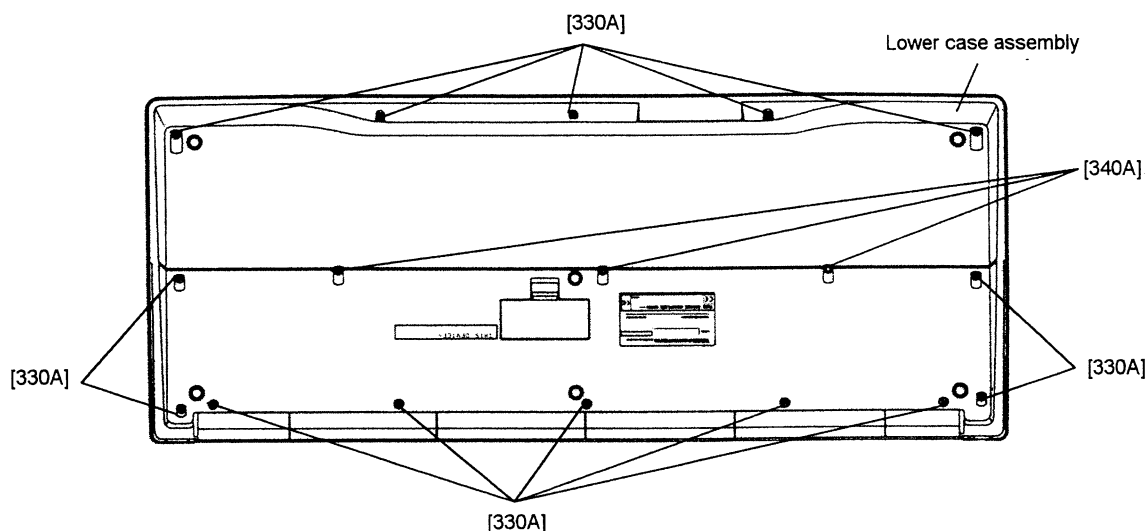


## ■ DISASSEMBLY PROCEDURE

### 1 Lower Case Assembly

1-1 Remove the battery cover assembly.

1-2 Remove the fourteen (14) screws marked as [330A] and three (3) screws marked as [340A], then the lower case assembly can be removed. (Fig. 1)



(Fig. 1)

[330A]: Bind Head Tapping Screw-P 3.0X12 MFZN2Y (EP600300)  
[340A]: Bind Head Tapping Screw-P 3.0X25 MFZN2Y (VK228100)

### 2 M Circuit Board

2-1 Remove the lower case assembly. (See procedure 1.)

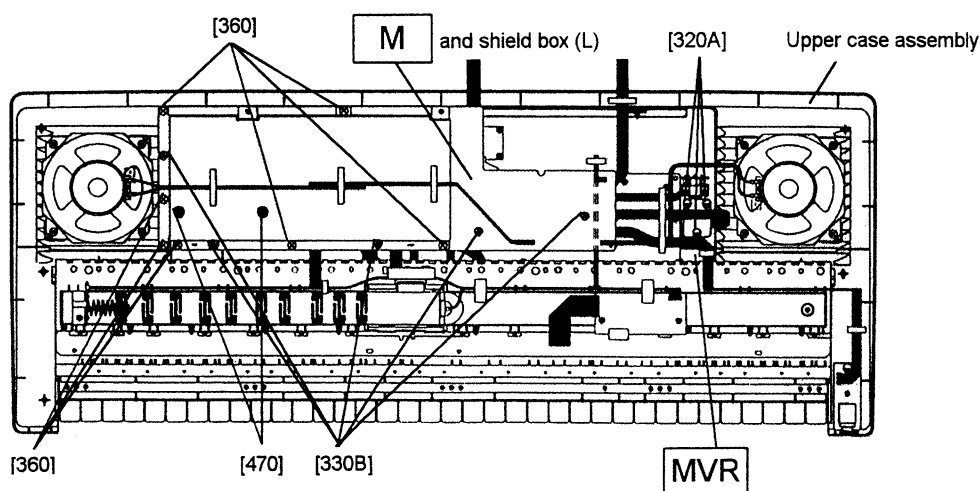
2-2 Remove the five (5) screws marked as [330B] and seven (7) screws marked as [360] and two (2) screws marked as [470], then remove the shield box (L), then the M circuit board can be removed. (Fig. 2)

### 3 MVR Circuit Board

3-1 Remove the MASTER VOLUME knob.

3-2 Remove the lower case assembly. (See procedure 1.)

3-3 Remove the three (3) screws marked as [320A], then the MVR circuit board can be removed. (Fig. 2)



(Fig. 2)

[320A]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)  
[330B]: Bind Head Tapping Screw-P 3.0X12 MFZN2Y (EP600300)  
[360]: Bind Head Tapping Screw-B 2.6X6 MFZN2Y (VC069600)  
[470]: Bind Head Tapping Screw-P 3.0X16 MFZN2Y (EP600310)

#### 4 PSW Circuit Board

- 4-1 Remove the POWER switch knob.
- 4-2 Remove the lower case assembly. (See procedure 1.)
- 4-3 Remove the two (2) screws marked as [320B], then the PSW circuit board can be removed. (Fig. 3)

#### 5 HP Circuit Board

- 5-1 Remove the lower case assembly. (See procedure 1.)
- 5-2 Remove the screw marked as [320C], then the HP circuit board can be removed. (Fig. 3)

#### 6 JACK Circuit Board

- 6-1 Remove the lower case assembly. (See procedure 1.)
- 6-2 Remove the four (4) screws marked as [320D], then the JACK circuit board can be removed. (Fig. 3)

#### 7 MKS Circuit Board

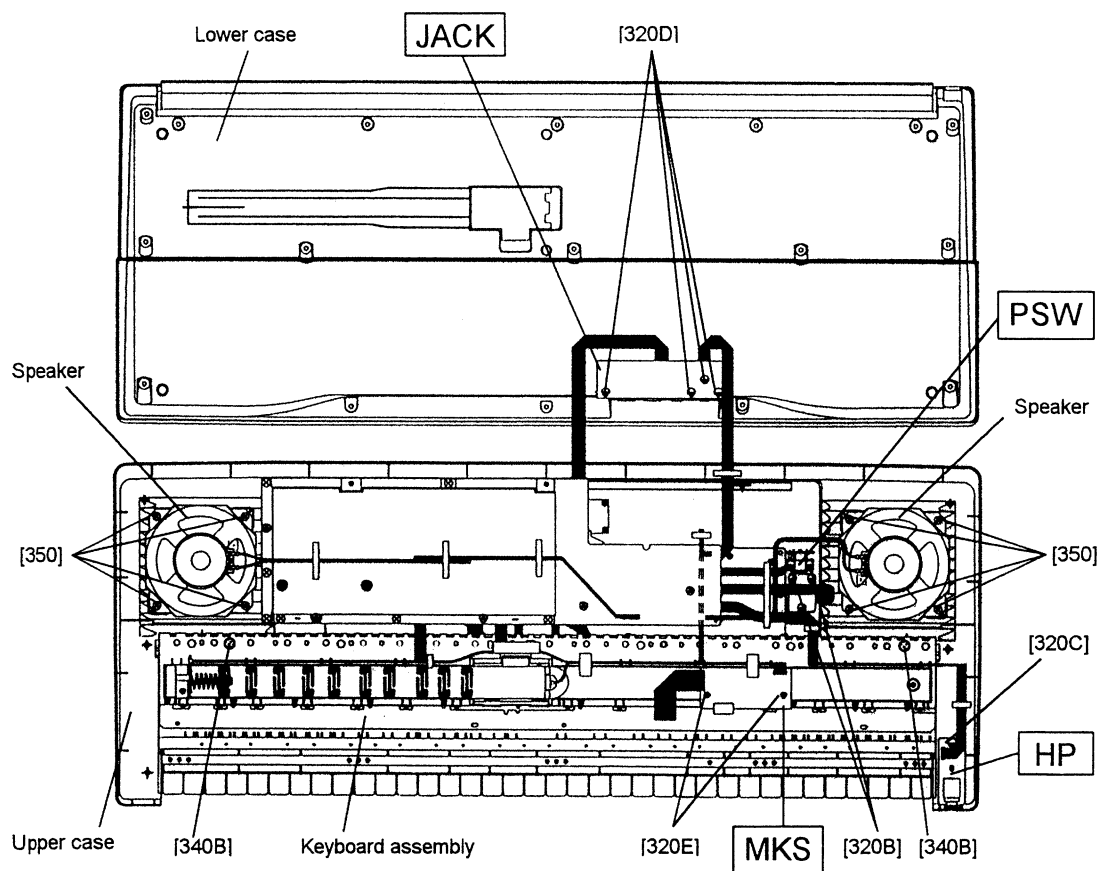
- 7-1 Remove the lower case assembly. (See procedure 1.)
- 7-2 Remove the two (2) screws marked as [320E], then the MKS circuit board can be removed. (Fig. 3)

#### 8 Keyboard Assembly

- 8-1 Remove the lower case assembly. (See procedure 1.)
- 8-2 Remove the MKS circuit board. (See procedure 7.)
- 8-3 Remove the two (2) screws marked as [340B], then the keyboard assembly can be removed. (Fig. 3)

#### 9 Speakers

- 9-1 Remove the lower case assembly. (See procedure 1.)
- 9-2 Remove the eight (8) screws marked as [350], then the left and right speakers can be removed. (Fig. 3)



(Fig. 3)

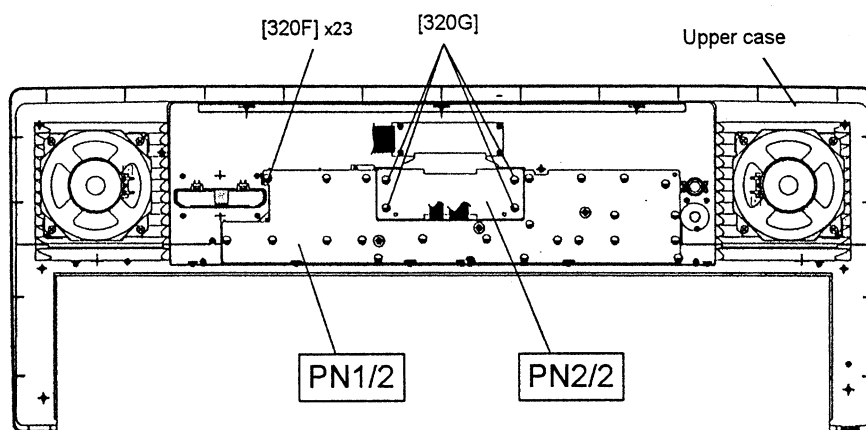
- [320B]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
- [320C]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
- [320D]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
- [320E]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
- [340B]: Bind Head Tapping Screw-P 3.0X25 MFZN2Y (VK228100)
- [350]: Bind Head Tapping Screw-P 4.0X8 MFZN2BL (VB931600)

**10 PN1/2 Circuit Board**

- 10-1 Remove the lower case assembly. (See procedure 1.)
- 10-2 Remove the M circuit board. (See procedure 2.)
- 10-3 Remove the shield box (U) located under the M circuit board.
- 10-4 Remove the keyboard assembly. (See procedure 8.)
- 10-5 Remove the twenty-three (23) screws marked as [320F], then the PN1/2 circuit board can be removed. (Fig. 4)

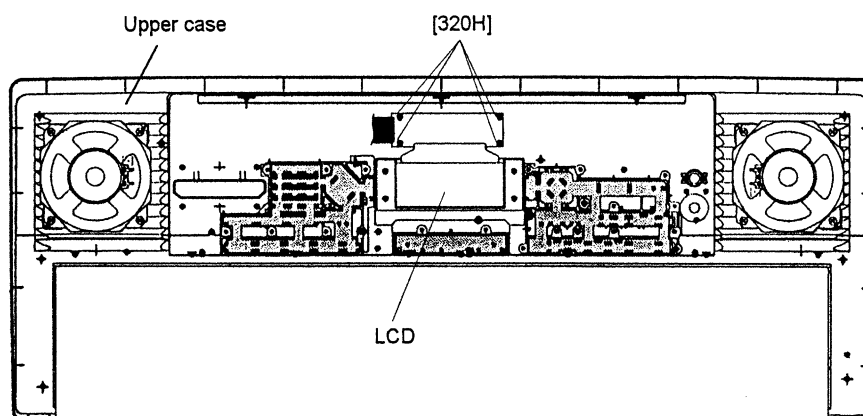
**11 LCD**

- 11-1 Remove the lower case assembly. (See procedure 1.)
- 11-2 Remove the M circuit board. (See procedure 2.)
- 11-3 Remove the shield box (U) located under the M circuit board.
- 11-4 Remove the four (4) screws marked as [320G] to remove the PN2/2 circuit board retaining the LCD. (Fig. 4)
- 11-5 Remove the four (4) screws marked as [320H], then the LCD can be removed. (Fig. 5)



(Fig. 4)

[320F]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)  
 [320G]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)



(Fig. 5)

[320G]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)

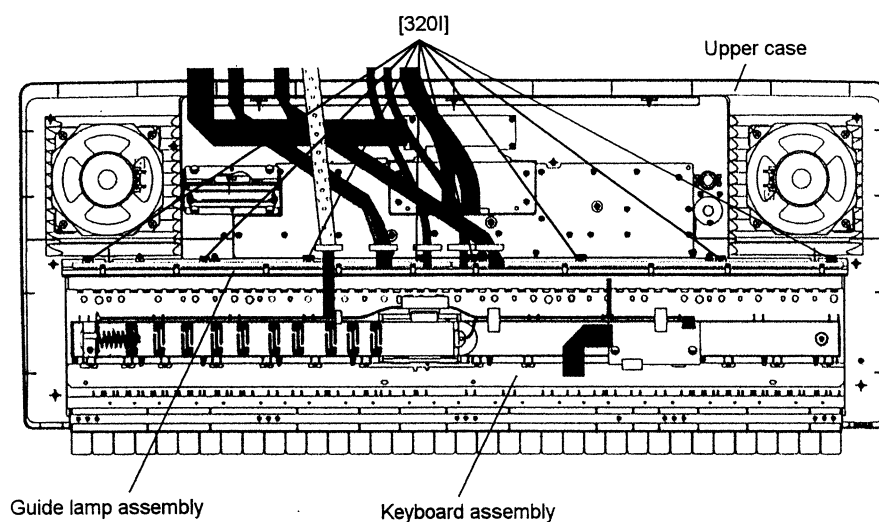
## 12 GL1 and GL2 Circuit Boards (PSR-420 only)

- 12-1 Remove the lower case assembly. (See procedure 1.)
- 12-2 Remove the keyboard assembly. (See procedure 8.)
- 12-3 Remove the eight (8) screws marked as [320I], then the guide lamp assembly can be removed. (Fig. 6)

12-4 Remove the five (5) screws marked as [50A], then the GL1 circuit board can be removed. (Fig. 7)

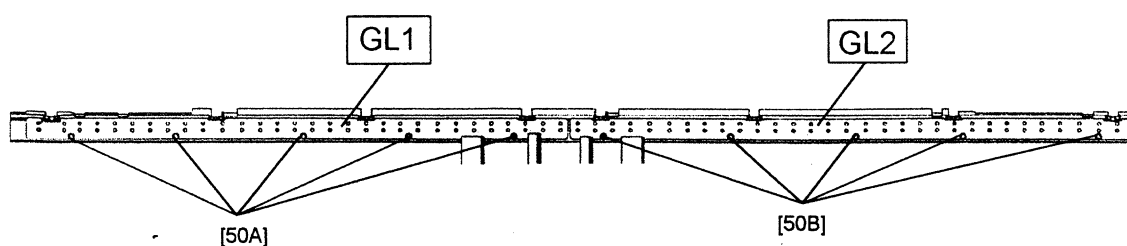
12-5 Remove the five (5) screws marked as [50B], then the GL2 circuit board can be removed. (Fig. 7)

※ When you reinstall the guide lamp assembly into the unit, you should tighten the screws marked as [320I] from the center one.



(Fig. 6)

[320I]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)



(Fig. 7)

[50A]: Bind Head Tapping Screw-P 2.6X8 MFZN2Y (EP620100)

[50B]: Bind Head Tapping Screw-P 2.6X8 MFZN2Y (EP620100)



## ■ LSI PIN DESCRIPTION

### ● HD6413002FP16 (XQ375A00) CPU <H8/3002>

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	A21	O	Address bus	51	A12	O	Address bus
2	A20	O		52	A13	O	
3	VCC			53	A14	O	
4	PB0	I/O	Power supply	54	A15	O	
5	PB1	I/O		55	A16	O	
6	PB2	I/O		56	A17	O	
7	PB3	I/O	Port B	57	A18	O	
8	PB4	I/O		58	A19	O	
9	PB5	I/O		59	VSS		Ground
10	PB6	I/O		60	/WAIT	I	Bus cycle wait
11	PB7	I/O		61	P61	I/O	Port 6
12	/RESO	I	Reset	62	P62	I/O	
13	VSS		Ground	63	φ		Not connected
14	TXD0	O	Transmit data (MIDI OUT)	64	/STBY	I	Stand-by mode signal
15	P91	I/O	Port 9	65	/RES	I	Reset
16	RXD0	I	Receive data (MIDI IN)	66	NMI	I	Non-maskable interrupt
17	RXD1	I	Receive data (Keyboard)	67	VSS		Ground
18	P94	I/O	Sync. signal	68	EXTAL	I	Clock
19	SCK1	O		69	XTAL	O	
20	P40	I/O		70	VCC		Power supply
21	P41	I/O	Port 4	71	/AS	O	Address strobe
22	P42	I/O		72	/RD	O	Read strobe
23	P43	I/O		73	/HWR	O	Write strobe (High)
24	VSS		(Ground)	74	/LWR	O	Write strobe (Low)
25	P44	I/O	Mode select	75	MD0	I	Mode select
26	P45	I/O		76	MD1	I	
27	P46	I/O		77	MD2	I	
28	P47	I/O	Analog power supply	78	AVCC		Analog power supply
29	D08	I/O		79	VREF	I	Reference voltage
30	D09	I/O		80	AN0	I	Analog data input (Power)
31	D10	I/O	Data bus	81	AN1	I	Analog data input (SUSTAIN)
32	D11	I/O		82	P72	I/O	Port 7
33	D12	I/O		83	P73	I/O	
34	D13	I/O	Power supply	84	P74	I/O	
35	D14	I/O		85	P75	I/O	
36	D15	I/O		86	P76	I/O	
37	VCC		Analog ground	87	P77	I/O	Port 8
38	A00	O		88	AVSS		
39	A01	O		89	P80	I/O	Chip select
40	A02	O	Address bus	90	/CS3	I	
41	A03	O		91	/CS2	I	
42	A04	O		92	/CS1	I	Ground
43	A05	O	(Ground)	93	/CS0	I	
44	A06	O		94	VSS		Port A
45	A07	O		95	PA0	I/O	
46	VSS		Address bus	96	PA1	I/O	
47	A08	O		97	PA2	I/O	Address bus
48	A09	O		98	PA3	I/O	
49	A10	O	Address bus	99	A23	O	
50	A11	O		100	A22	O	

### ● PCM69AP-3 (XM051A00) DAC (Digital to Analog Converter)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	Vcc		Analog power supply	9	DGND		Digital Ground
2	COML		V-common, channel L	10	DATAR	I	Data input, channel R
3	OUTL	O	Current output, channel L	11	BCK	I	Bit clock
4	SRV		Servo filter	12	SCLK	I	System clock
5	REF		Reference filter	13	WDCK	I	Word clock
6	OUTR	O	Current output, channel R	14	DATAL	I	Data input, channel L
7	COMR		V-common, channel R	15	TP1		Test pin
8	AGND		Analog ground	16	VDD		Digital power supply

• YMW258B-F (XQ200A00) GEW8S (AWM Tone Generator)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	NC			41	VSS		Ground
2	VSS		Ground	42	NC		
3	D0	I/O	CPU data bus	43	VSS		Ground
4	D7	I/O		44	AB0	O	Voice memory address bus
5	A0	I	CPU address bus	45	DB7	I/O	Voice memory data bus
6	A1	I		46	AB1	O	Voice memory address bus
7	A2	I		47	AB2	O	
8	A3	I		48	AB10	O	
9	/CS	I	Chip select	49	AB3	O	
10	/RD	I	Read control	50	AB4	O	
11	/WR	I	Write control	51	AB11	O	
12	XIN		Clock	52	AB5	O	Voice memory address bus
13	XOUT			53	AB9	O	
14	/IC	I	Initial clear	54	AB6	O	
15	TST0		Test pin	55	AB8	O	
16	TST1			56	AB7	O	
17	VSS		Ground	57	AB13	O	Ground
18	/DITHER		Not used	58	AB12	O	
19	DACL	O	Data output, channel L	59	AB14	O	
20	DACDCLK	O	Bit clock output to DAC	60	AB15	O	Voice memory address bus
21	DACRD	O	Data output, channel R	61	AB17	O	
22	DACLE	O	Word clock output to DAC	62	VSS		
23	NC		System clock output to DAC	63	VSS		
24	DACMC	O		64	VSS		Ground
25	CH27			65	VSS		
26	DSPSYW			66	AB16	O	Voice memory address bus
27	DSPSEND		Not used	67	AB18	O	
28	DSPRET			68	AB19	O	
29	/DSPIC			69	AB20	O	
30	DSPCDS		Power supply	70	AB21	O	Memory read control Power supply Memory write control
31	DSPCLK			71	MRD	O	
32	VDD		Voice memory data bus	72	VDD		
33	DB3	I/O		73	MWR	O	CPU data bus
34	DB2	I/O		74	D3	I/O	
35	DB4	I/O		75	D4	I/O	
36	DB1	I/O	Voice memory data bus	76	D2	I/O	
37	DB5	I/O		77	D5	I/O	Ground
38	DB0	I/O		78	D1	I/O	
39	DB6	I/O		79	D6	I/O	
40	NC			80	VSS		Ground

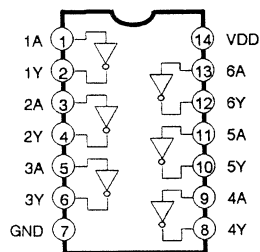
• HD63B05V0D73P (XJ450A00) CPU

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	/RES	I	Reset	21	C7	I/O	Port C
2	/INT	I	Interrupt request	22	C6	I/O	
3	NUM	I	Non-maskable interrupt	23	C5	I/O	
4	A7	I/O	Port A	24	C4	I/O	
5	A6	I/O		25	C3	I/O	Port D
6	A5	I/O		26	C2	I/O	
7	A4	I/O		27	C1	I/O	
8	A3	I/O	Port B	28	C0	I/O	
9	A2	I/O		29	D0	I/O	(Serial data output) (Serial data input) (Clock for serial operation) (Interrupt request 2) (Standby mode signal)
10	A1	I/O		30	D1	I/O	
11	A0	I/O		31	D2	I/O	
12	B0	I/O	Port B	32	D3/TX	O	
13	B1	I/O		33	D4/RX	I	Timer Clock
14	B2	I/O		34	D5//CK	O	
15	B3	I/O		35	D6//INT2	I	
16	B4	I/O	Ground	36	/STBY	I	
17	B5	I/O		37	TIMER	I	Power supply
18	B6	I/O		38	XTAL	O	
19	B7	I/O		39	EXTAL	I	
20	VSS			40	VCC		

## ■ IC BLOCK DIAGRAM

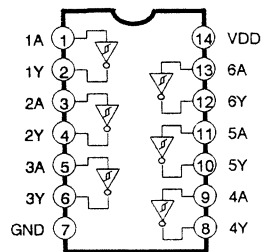
### ● TC74HC04AP(IR000400)

1Hex Inverter



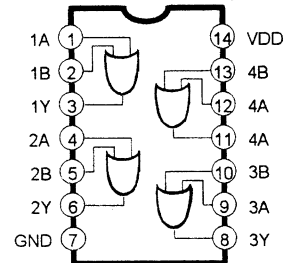
### ● TC74HC14AP(IR001400)

Hex Inverter



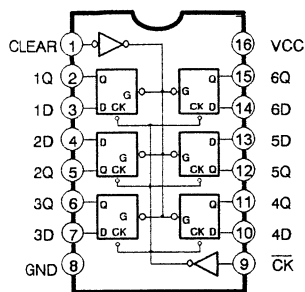
### ● TC74AC32P(XG658A00)

Quad 2 Input OR



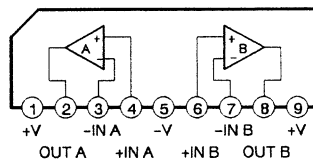
### ● TC74HC174AP(IR017400)

Hex D-type Flip-Flop



### ● $\mu$ PC4570HA(XB247A00)

Dual Operational Amplifier



## ■ CIRCUIT BOARDS

## Notes)

## PSR-320

Circuit Board: M (NX007170) J (XQ410C0)  
 M (NX007120) U,C,E (XQ41030)  
 JACK (NX007180) J (XQ410C0)  
 JACK (NX007130) U,C,E (XQ41030)  
 HP (NX007190) J (XQ410C0)  
 HP (NX007140) U,C,E (XQ41030)  
 MVR (NX007200) J (XQ410C0)  
 MVR (NX007150) U,C,E (XQ41030)  
 PSW (NX007210) J (XQ410C0)  
 PSW (NX007160) U,C,E (XQ41030)

## PSR-420

Circuit Board: M (NX007290) J (XQ410B0)  
 M (NX007240) U,C,E (XQ41020)  
 JACK (NX007300) J (XQ410B0)  
 JACK (NX007250) U,C,E (XQ41020)  
 HP (NX007310) J (XQ410B0)  
 HP (NX007260) U,C,E (XQ41020)  
 MVR (NX007320) J (XQ410B0)  
 MVR (NX007270) U,C,E (XQ41020)  
 PSW (NX007330) J (XQ410B0)  
 PSW (NX007280) U,C,E (XQ41020)

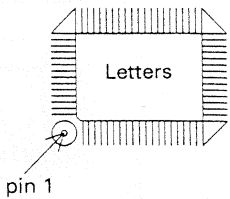
## PSR-320 &amp; PSR-420

1. IC
  - IC 101: HD6413002FP16 (XQ375A00)  
CPU <H8/3002>
  - IC 102: IC-PST993C-T (XQ693A00) RESET
  - IC 103: TC74HC14AP (IR001400) S-INVERTER
  - IC 201: UPC27C80010 (XR007A00) :ROM 8M  
(PROGRAM): PSR-320
  - IC 201: UPC27C80010 (XR008A00) :ROM 8M  
(PROGRAM): PSR-420
  - IC 202: W24257-70LL (XQ696A00) SRAM 256K
  - IC 203: TC74AC32P (XG658A00) OR
  - IC 301: YMW258B-F (XQ200A00) GEW8S
  - IC 302: MX23C1610PC-12 (XQ697A00) MASKED  
ROM 16M
  - IC 401: PCM69AP-3 (XM051A00) DAC
  - IC 402: AN8005-(FTA)+5V (XP515A00)  
REGULATOR +5V
  - IC 403-405: UPC4570HA (XB247A00) OP AMP
  - IC 501-503: TC74HC174AP (IR017400) D-FF
  - IC 504: TC74HC04AP (IR000400) INVERTER
  - IC 901: LA4705 (XM593A00) POWER AMP 15W
  - IC 902: PQ05RA1 (XL450A00) REGULATOR +5V
  - IC 903: S-81250PG-T (XM993A00) REGULATOR  
+5V
2. Transistor
  - TR 501,502, 801,802: 2SC1815 Y,GR (IC1815M0)
  - TR 503-505: 2SA(3CG)881Q (VQ175600) or DTB113ZS
  - TR 506: 2SA(3CG)881Q (VQ175600) or DTB113ZS:  
PSR-420 only  
*When digital transistor, DTB113ZS is used  
as TR 503-TR505, jumper wire is installed to  
R567, R568, R569, R570, R571, R572,  
R573 and R574.*
3. Transistor Array
  - TA 501,502: ULN2803A (VI707900): PSR-420 only
4. Diode
  - D 101,401, 402,801: 1SS133,1SS176 (VB941200)
  - D 802,901: 20E1-FC4 (VL723600)
5. Photo Coupler
  - PC 801: PC-900V (VG181900)
6. Mylar Capacitor
  - C 421,422: 0.0560 50V J (UA654560)
  - C 425,426: 0.0220 50V J (UA654220)
  - C 915-918: 0.0470 50V J (UA654470)
7. Ceramic Capacitor
  - C 411-414: B 220P 50V K (FG612220)
  - C 423,424: B 180P 50V K (FG612180)
  - C 801,803: F 0.0100 50V Z (FG644100)
  - C 903,904: B 1200P 50V K (FG613120)
  - C 905,906: B 470P 50V K (FG612470)
  - C 909,910: SL 47P 50V J (FG611470)

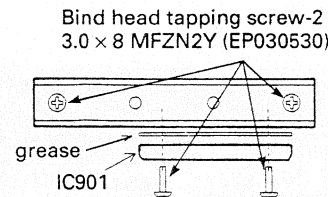
8. Ceramic Capacitor Array
  - CA 101,501, 502,504: 470P 50V M (VH285600)
  - CA 102,503: 470P X12 (VT487100)
9. Electrolytic Cap.
  - C 102,105,112, 302,402,404, 926: 100.00 10.0V (UI528100)
  - C 403,907,908: 1.00 50.0V (UJ866100)
  - C 405,406,409, 410: 10.00 16.0V (UI537100)
  - C 407,408: 4.70 50.0V (UI566470)
  - C 416,912,929: 100.00 10.0V (UJ828100)
  - C 419,420: BP 10.00 16.0V (UN83710)
  - C 501: 1000 6.3V (UJ819100)
  - C 901,902: 10.00 16.0V (UJ837100)
  - C 911: 33.00 16.0V (UJ837330)
  - C 913,925,928: 100.00 25.0V (UJ848100)
  - C 919,920: 47.00 16.0V (UJ837470)
  - C 923: 4700 25.0V (UJ749470)
  - C 930: 470.00 16.0V (UJ838470)
10. Semiconductive Cera. Cap.
  - C 101,103,104, 106-108,110, 111,113,201-203,301,303, 401,415,427, 428,502-504, 802,914,921,922, 924,927: 0.1000 25V Z (VC694800)
  - C 505-507: 0.1000 25V Z (VC694800): PSR-420 only
11. Carbon Resistor
  - R 101,103,521, 908: 100.0K 1/4 J (HF758100)
  - R 102,413-418, 522,567,569, 571,802,807, 907: 10.0K 1/4 J (HF757100)  
*When digital transistor, DTB113ZS is used  
as TR 503-TR505, jumper wire is installed to  
R567, R569, R571 and R573.*
  - R 104: 390.0K 1/4 J (HF858390)
  - R 105: 220.0K 1/4 J (HF758220)
  - R 108,109,563, 565,801,803: 47.0K 1/4 J (HF757470)
  - R 111: 820.0 1/4 J (HF755820)
  - R 112,805,809, 810,917,918: 220.0 1/4 J (HF755220)
  - R 113,519,520: 22.0 1/4 J (HF754220)
  - R 401,402,405, 406: 560.0 1/4 J (HF755560)
  - R 403,404,915, 916: 330.0 1/4 J (HF755330)
  - R 407,408: 2.7K 1/4 J (HF756270)
  - R 409-412: 6.8K 1/4 J (HF756680)
  - R 419,420: 33.0K 1/4 J (HF757330)
  - R 421,422,901, 902: 27.0K 1/4 J (HF757270)
  - R 423,424: 150.0 1/4 J (HF755150)
  - R 501-516: 68.0 1/4 J (HF854680): PSR-420 only
  - R 517,518: 68.0 1/4 J (HF854680)
  - R 523-559: 82.0 1/4 J (HF854820)
  - R 562,564,905, 906: 2.2K 1/4 J (HF756220)
  - R 566,568,570: 1.0K 1/4 J (HF756100)  
*When digital transistor, DTB113ZS is used  
as TR 503-TR505, jumper wire is installed to  
R566, R568, R570 and R572.*
  - R 572: 1.0K 1/4 J (HF756100): PSR-420 only
  - R 573: 10.0K 1/4 J (HF757100): PSR-420 only
  - R 804: 270.0 1/4 J (HF755270)
  - R 806,808: 22.0K 1/4 J (HF757220)
  - R 903,904: 15.0K 1/4 J (HF757150)
  - R 909-912: 2.2 1/4 J (HF753220)
  - R 913,914: 56.0 1/4 J (HF854560)
12. Resistor Array
  - RA 501: RGL8X103J (VF771900)

13. Rotary Variable Resistor  
VR 901: A10Kx2 (VQ320200) MASTER VOLUME
14. Line Filter  
L 904: SU10VD-10020 (VH227500)
15. Coil  
L 101,102,801-  
809,901-903: FL5R200QN 20u (VB971100)
16. Ceramic Resonator  
CR 101: 16.0M EF0EC1605T4 (VT487200) or  
16.0M CST16.00M (VT630600)  
CR 301: 9.40M CST9.40MTW (VJ338000)
19. Push Switch  
SW 901: SDDL1 (VQ670600) POWER switch
20. Phone Jack  
JK 801: YKB21-5012 BL (VB312600) SUSTAIN  
JK 901: YKB21-5006 (LB101870) PHONES
21. DIN Connector  
JK 802,803: 5P YKF51-5050 (VJ107200) MIDI IN,OUT
22. DC IN Connector  
JK 804: HEC2305 (VC664500) DC IN 10-12V
23. Cable Holder  
CN 102,801: 51048-7P TE (VI878500)  
CN 802,901: 51048-6P TE (VI878400)  
CN 902-905: 51048-5P TE (VI878300)  
CN 906,907: 51048-4P TE (VI878200)
24. Wire Trap  
CN 101: 52151-14P SE (VK02730)  
CN 103,802: 52151-6P SE (VK026500)  
CN 501,502: 52151-8P SE (VK026700): PSR-420 only  
CN 503,504: 52151-4P SE (VK026300): PSR-420 only  
CN 505: 52151-10P SE (VK02690)  
CN 506: 52147-7P TE (VK025100)  
CN 801: 52151-7P SE (VK026600)
25. Connector  
CN 507: PSB4D30-2 (VT40210)
26. Connector Assembly  
W1: VR 5P (VT39810) CN902-CN903  
W2: HP 5P (VT39820) CN904-CN905  
W3: SW 4P (VT39830) CN906-CN907  
W4: PS 6P (VT73070) CN802-CN901  
W5: JK 7P (VT73080) CN102-CN801  
W6: JP 8P (VT71710) CNJ1-CNJ2  
W7: ROM2 (VT71720)
27. Jumper Wire  
J 201: not installed  
J 202: installed  
J 501-503: installed: PSR-320 only

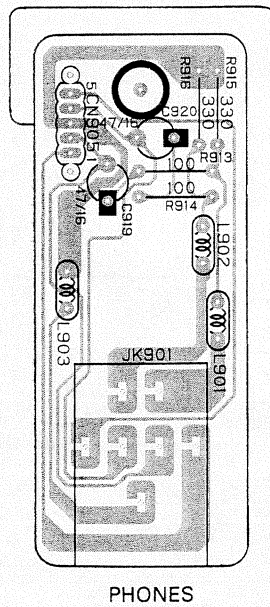
• IC101, IC301 installation



• IC901 installation

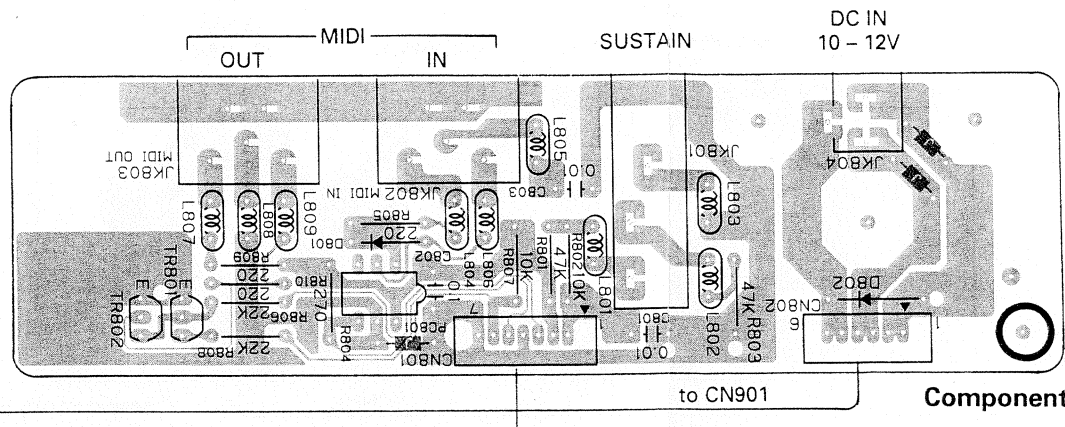


• HP Circuit Board

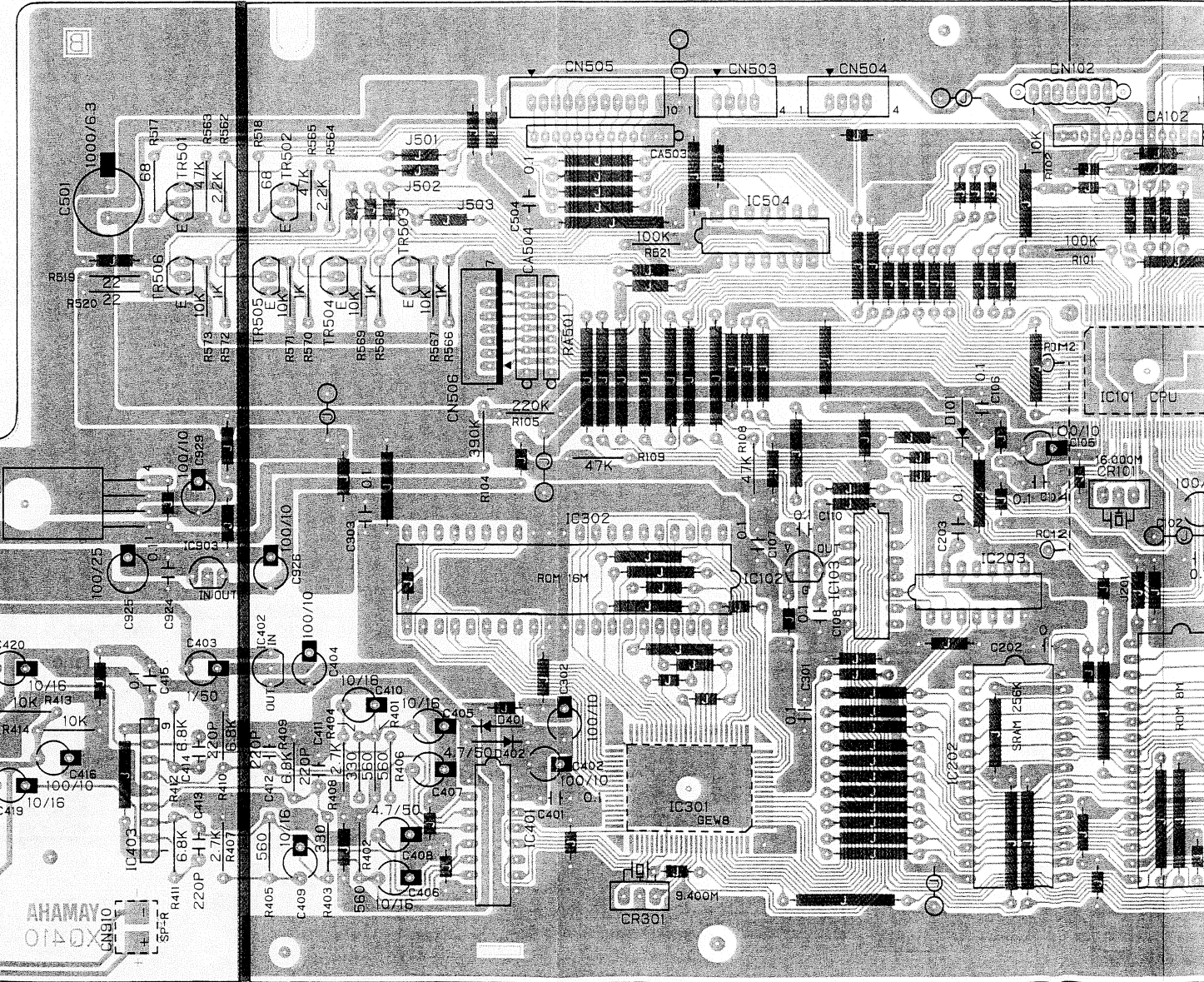


2NA-VT38060

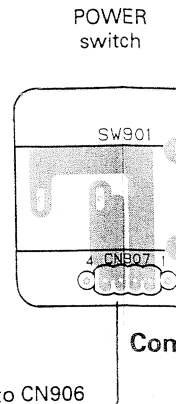
• JACK Circuit Board



• M Circuit Board

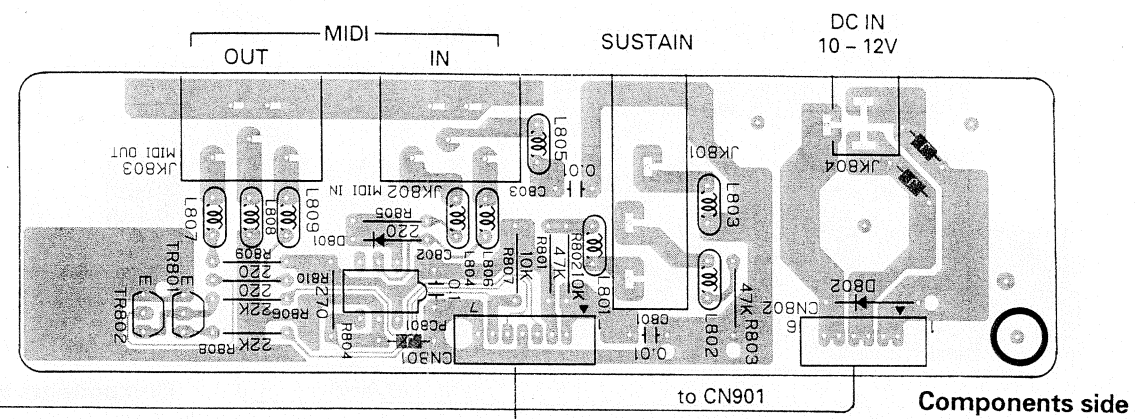


• PSW Circuit Board

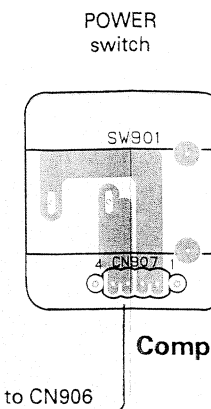




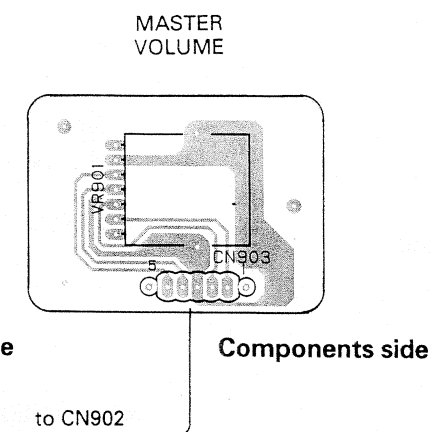
- **JACK Circuit Board**



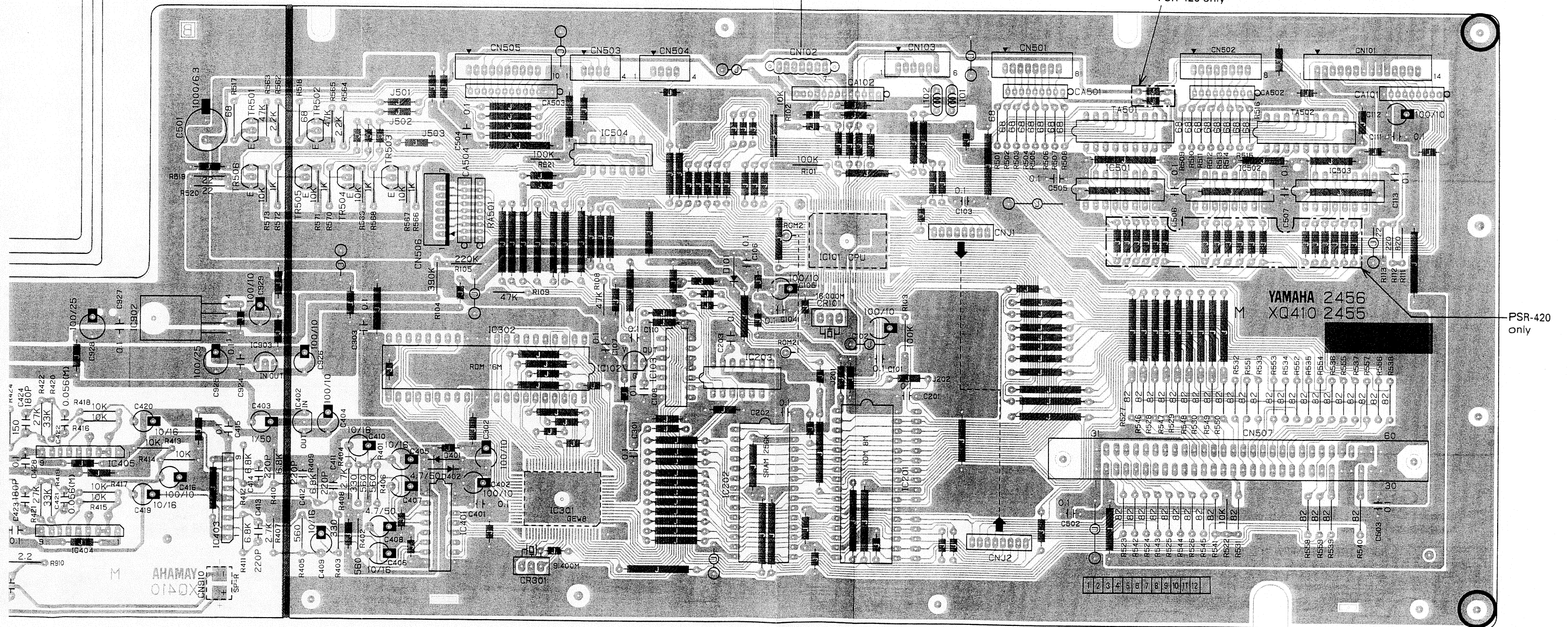
- PSW Circuit Board



- MVR Circuit Board

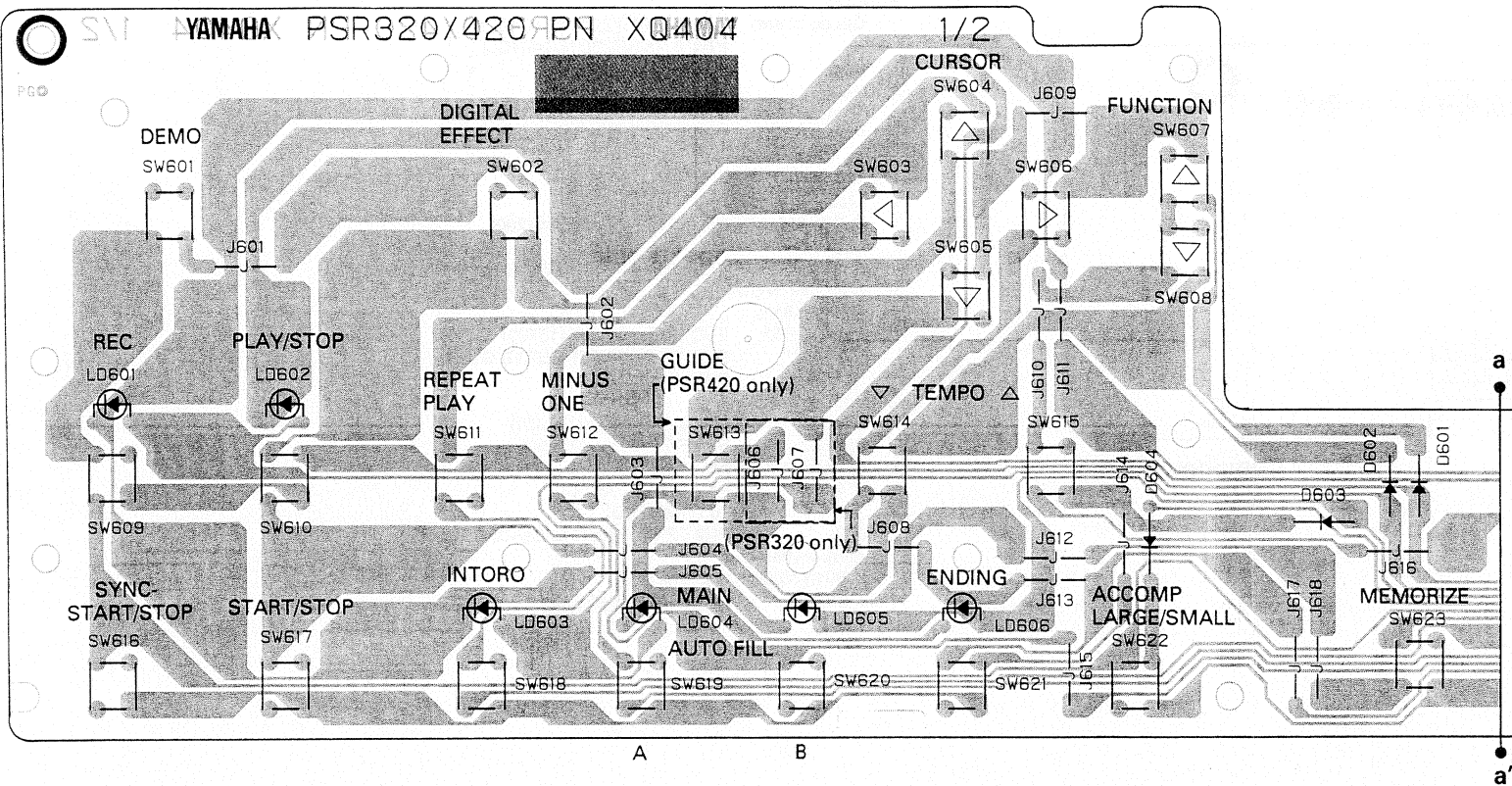


- **M Circuit Board**

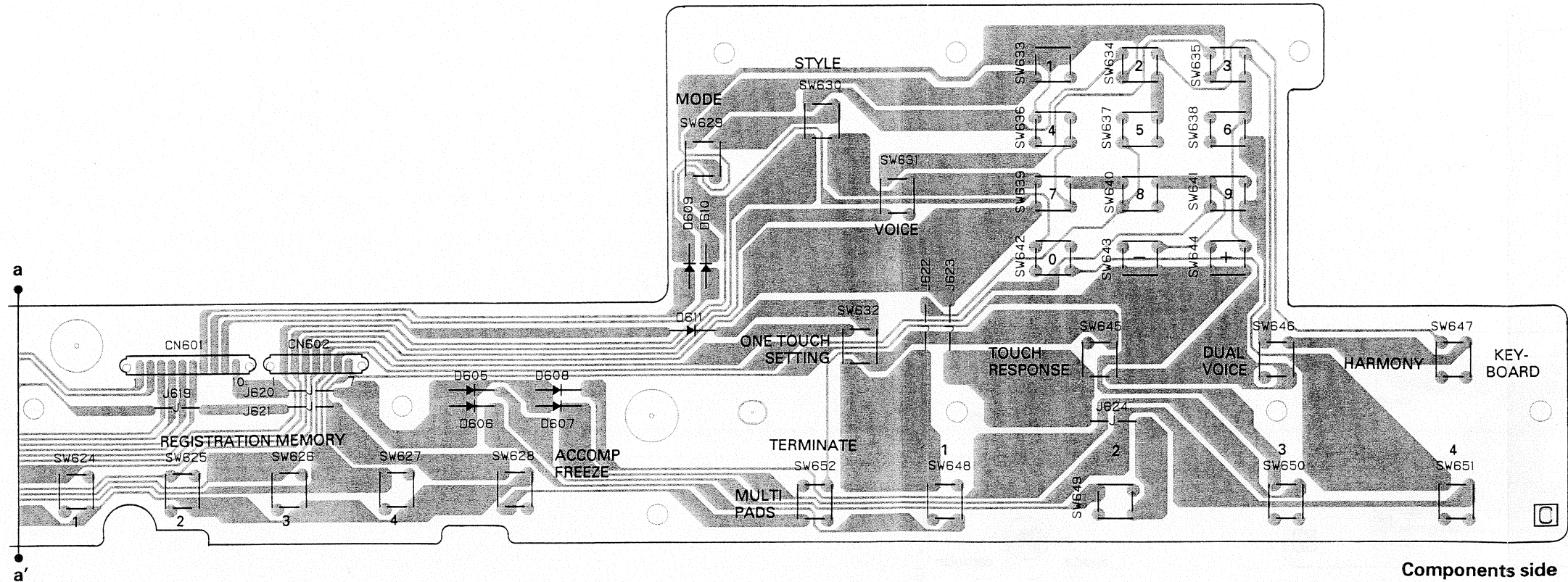
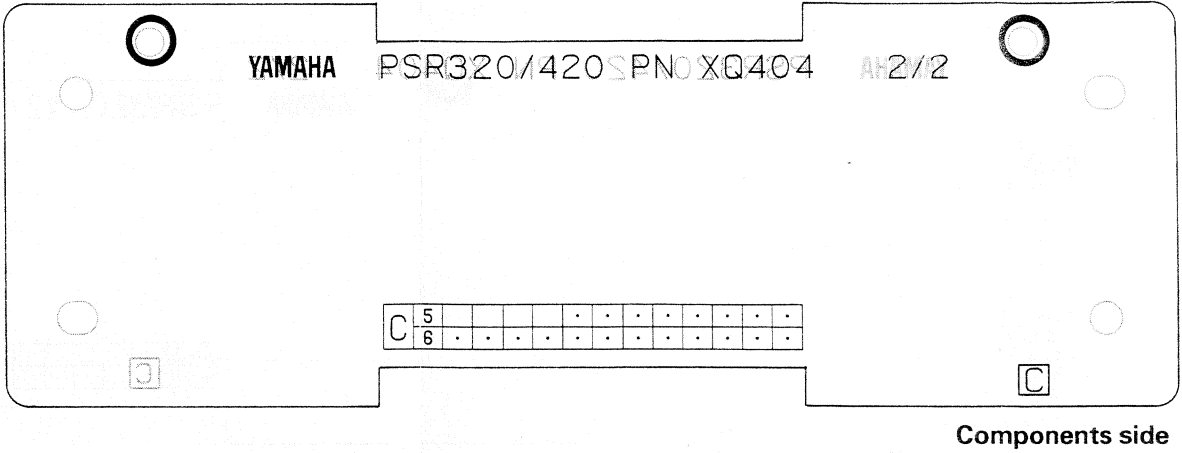




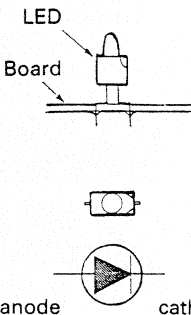
• PN1/2 Circuit Board



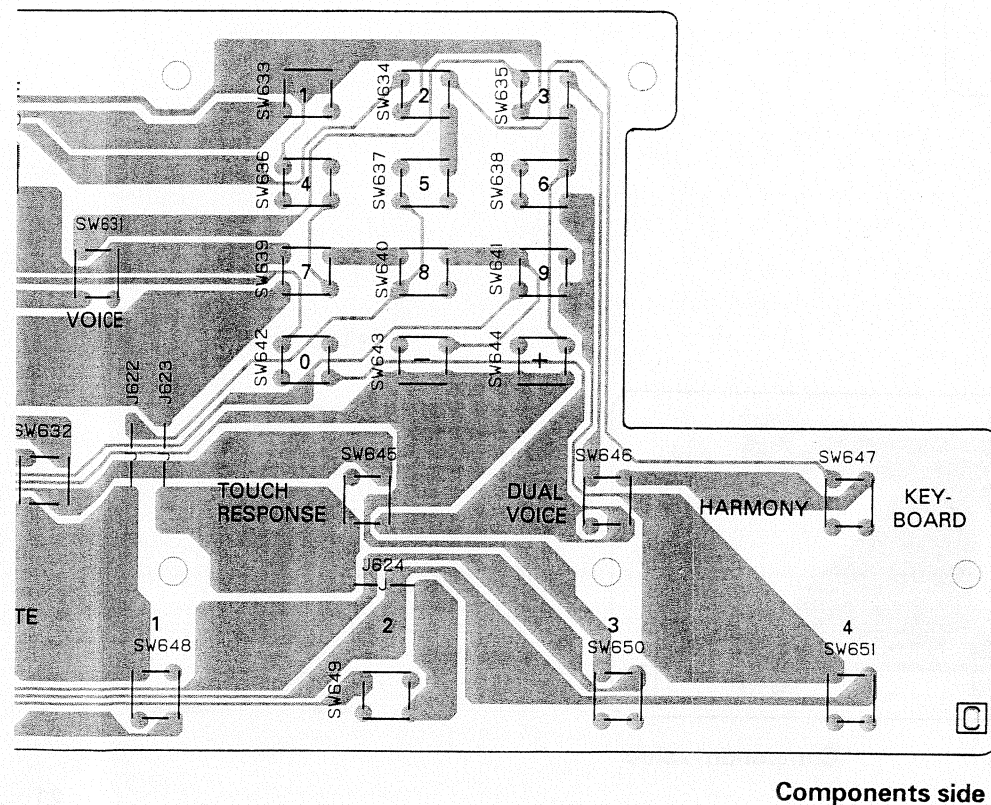
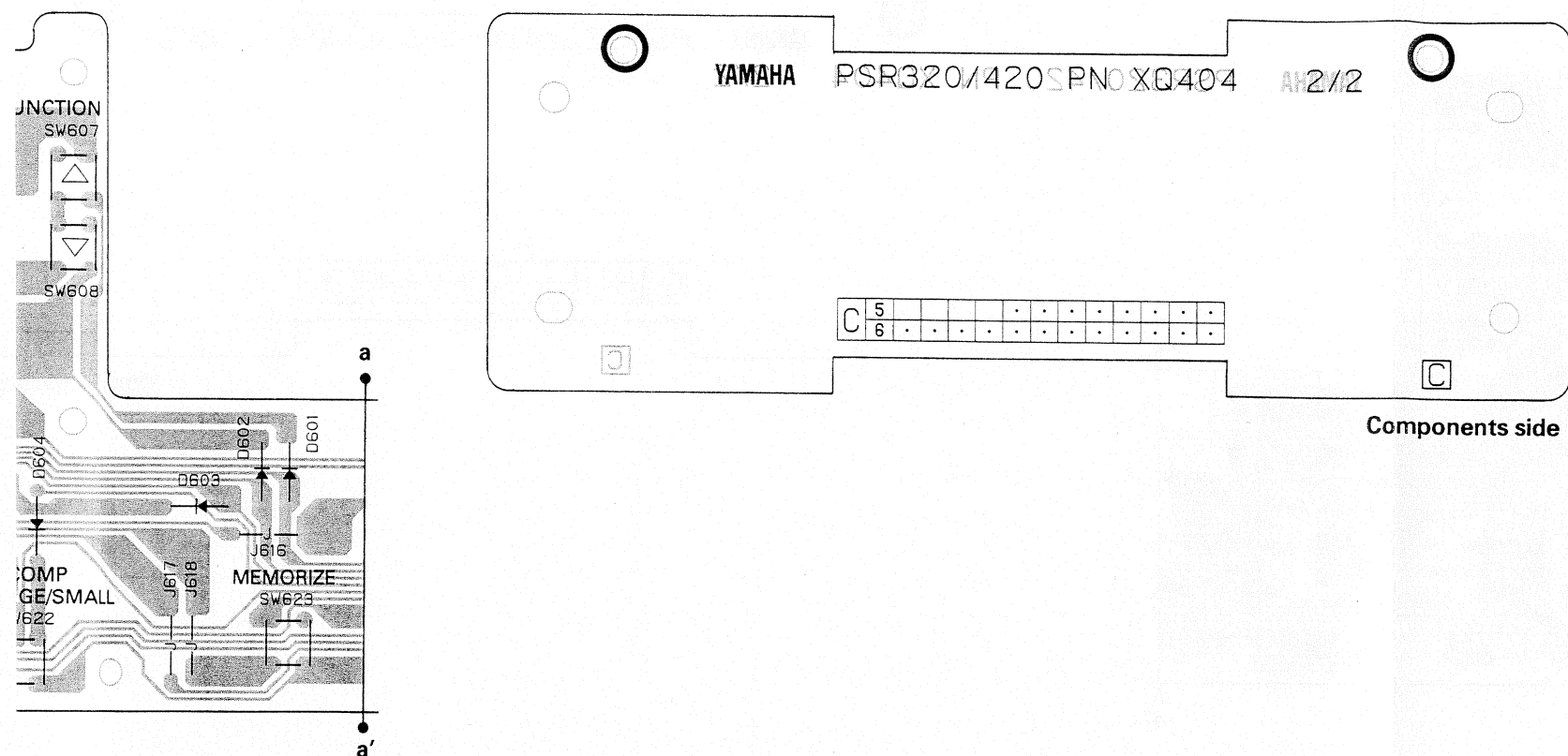
• PN2/2 Circuit Board (used for retaining the LCD)



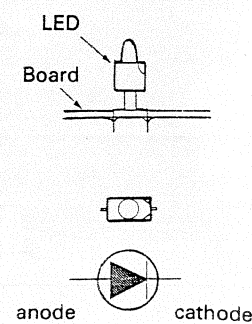
• LED installation



• PN2/2 Circuit Board (used for retaining the LCD)



• LED installation



Notes)

PSR-320

Circuit Board: PN1/2 NX007220 (XQ404C0)  
PN2/2 NX007230 (XQ404C0)

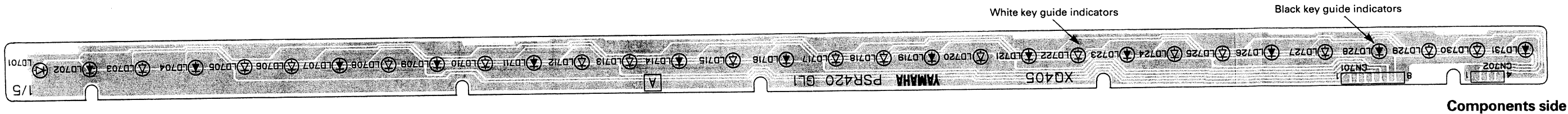
PSR-420

Circuit Board: PN1/2 NX007340 (XQ404C0)  
PN2/2 NX007350 (XQ404C0)

PSR-320 & PSR-420

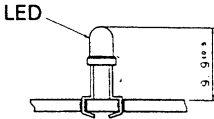
1. Diode  
D 601-611: IN4148TY-P=10 (VL644200)
2. LED  
LED 601-606: SLZ-190B-10-T2 (VT387900)
3. Light Touch Switch  
SW 601-612, 614-652: EVQ PKE 05B (VT415700)  
SW 613: EVQ PKE 05B (VT415700) GUIDE: PSR-420 only
4. Cable Holder  
CN 601: 51048-10P TE (VI878800)  
CN 602: 51048-7P TE (VI878500)
5. Connector Assembly  
W1: PN2 10P (VT73050) to DM-CN505  
W2: PN2 7P (VT73060) to DM-CN506
6. Jumper Wire  
J 601-605, 608-624: installed  
J 606, 607: installed: PSR-320 only

• GL1 Circuit Board (PSR-420 only)

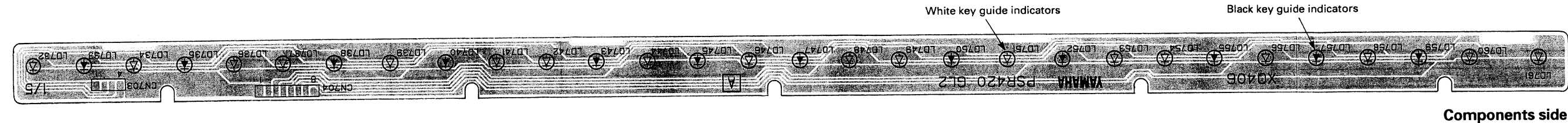


- Notes)
- Circuit Board: GL1 (VT380300) XQ405A0: PSR-420 only
- LED:
    - : SLR-342MGTC7 GR (VT525600) Black keys
    - : SLR-342VRTC7 RE (VT525700) White keys
  - Connector Assembly:
    - : GL L-8 (VT704700)
    - : GL L-4 (VT704900)

• LED installation

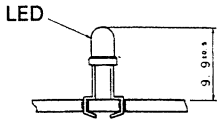




• GL2 Circuit Board (PSR-420 only)



- Notes)
- Circuit Board: GL2 (VT380400) XQ406A0: PSR-420 only
- LED:
    - : SLR-342MGTC7 GR (VT525600) Black keys
    - : SLR-342VRTC7 RE (VT525700) White keys
  - Connector Assembly:
    - : GL R-8 (VT704800)
    - : GL L-4 (VT704900)

• LED installation



2NA-VT38070  : GL1  
2NA-VT38080  : GL2

■ TEST PROGRAM

A. TYPE OF TEST PROGRAM MODE

There are three test modes as follows:

- Mode 1: Hardware circuit test and each memory address line test
- Mode 2: Hardware circuit test and entire memory address test
- Mode 3: RAM backup function test

B. HOW TO ENTER THE TEST PROGRAM

While holding down white keys of the keyboard, turn on the POWER switch, then the test program is initiated. Pressing keys are as listed below.

Test mode	Pressing keys
Mode 1	C6 and B5
Mode 2	C6 and B5 and A5
Mode 3	C6 and B5 and C2

When the system enters the test on mode 2 or mode 3, then the data on RAM is overwritten.

C. TEST PROGRAM

Mode1/Mode2

Test order	Test Program
1	Keyboard detect CPU test
2	RAM test
3	PROGRAM ROM verify
4	WAVE ROM verify
5	Switch, LED/LCD, Version display, Music cartridge, Foot pedal, Keyboard contact point, MIDI, Guide lamps

Guide lamps test is the test for a PSR-420.

There are some differences in each test between the test mode 1 and test mode 2.

It takes a few minutes to complete the initial tests on the test mode 2. After the initial tests have been performed, "TstMode2" message will appear on the display so you could perform other tests.

Mode 3

Test order	Test Program
1	Keyboard detect CPU test
2	RAM test
3	Backup battery test ("***: Voltage" is displayed)

D. EXIT

Turn the POWER off to quit the test.

1. INITIAL TESTS

The following tests will be performed automatically when the test program is initiated.

- a Keyboard detect CPU test
- b RAM test
- c PROGRAM ROM verify
- d WAVE ROM verify

The test results of each test are indicated on the display.

Test	OK	NG
Keyboard detect CPU	no change	no change
RAM(Mode 1/Mode 2)	no change	"Err""M=1 RAM"
RAM(Mode 3)	no change	"Err""M=3 RAM"
PROGRAM ROM	no change	"Err""M=1 ROM"
WAVE ROM	no change	"Err""M=1 WROM"

If the entire tests listed above are OK, the display will show "TstMode1" or "TstMode2" message according to the activated test mode.

1-1. Keyboard Detect CPU Test

Checks to see if data is sent from the CPU for keyboard touch detection

If data is not sent from, or if abnormal data is sent, an test is NG.

If an error occurs during the keyboard contact detection, the system does not enter the test mode.

If the test is OK, the system will proceed to test the RAM test.

1-2. RAM Test

If the test is OK on test mode 1 or test mode 2, then the system will proceed to the next test.

If the test is OK on test mode 3, then the system will display the version of ROM and then exit the test.

If an error is detected, press the [REPEAT PLAY] to proceed to test the next one, but the test function may not correctly work.

1-3. Program ROM Verify Check

Even when an error is detected, you can proceed to the next test by pressing the [REPEAT PLAY] key, however the test quality is not guaranteed.

1-4. Wave ROM Verify Check

If an error is detected, pressing [REPEAT PLAY] will proceed to the next test.

2. ROM VERSION DISPLAY MODE

In order to verify the ROM versions, press the key shown in the table below.

Key	ROM	Display
MODE	Program ROM	Pro Vr**. ***
STYLE#	Style ROM	StL Vr**. ***
VOICE#	Wave ROM	Vro Vr**. ***
ONE TOUCH SETTING	Voice parameter ROM	PAr Vr**. ***

3. PANEL SWITCH AND LED TEST

Press the panel switches consecutively, if the switch is OK, a sine wave will sound. The level of the sine wave is 21 dB lower than the maximum level.

When a switch is pressed, the LED adjacent to the switch will light up.

If two or more switches are turned on simultaneously, the display will show "---Push Sw".

Pressing [YES] key will sound a sine wave assigned to the L channel, and if you press [NO], a sine wave assigned to the R will output.

If you press the [FREEZE] key of the [REGISTRATION] function, the A/D converted value of the power will appear on the display. (the range of the value is 0 - 152.)



4. FOOT SWITCH TEST

Connect a foot switch to the [SUSTAIN] jack on the rear panel and press it on and off. When the foot switch is connected, "Pedal In" message will appear on the display.

Check that a sine wave of D3 sounds when the foot switch is off, and a sine wave of D4 will sound when the foot switch is turned on.

When the foot switch is off, the indicated value on the display is in the range of "2FF" to "3FF".

When the foot switch is on, the indicated value is "000" to "0FF".

If you disconnect the foot switch, the sine wave will not be heard and the display will show the "PedalOut" message.

5. KEYBOARD CONTACT POINT TEST

Play a scale on the keyboard with a steady and even touch, the corresponding velocity value is indicated on the display and the sounded signal will change depending on the velocity.

If a sine wave or a click is generated, the test is OK.

Velocity value	Output signal
1 - 10	Click
11- 126	Sine wave
127	Click

6. KEY GUIDE LAMP TEST (PSR-420)

When you play a scale on the keyboard, the corresponding key guide LED indicator will light up. (maximum: 10)

7. MIDI TEST

Connect the MIDI IN to the MIDI OUT via a MIDI cable, sine waves of A3 and A4 will sound alternately with a cycle of 250 msec. for voicing and muting.

8. LCD TEST

Check that all dots change to white (OFF) when the [TEMPO DOWN] key is pressed.

When the [TEMPO UP] key is pressed, all dots will change to black (ON).

If you press the [FUNCTION UP], then the LCD back-lit will light up, if the [FUNCTION DOWN] is pressed, the back-lit will turn off.

9. MUSIC CARTRIDGE TEST

Insert the supplied music cartridge to the slot, then the display will show the "Cart In" message and the test is initiated. If the test has been initiated on the test mode 2, when the test ends, the display will show a number regardless of the test results.

If you remove the cartridge, the "Cart Out" message will appear on the display and the test will end, then you can activate the other test.

If an error is detected during the test, press the [REPEAT PLAY] to perform to the other one.

10. SOUND OUTPUT TEST

Insert an appropriate phone plug into the PHONES jack and check that the correct signal is output from each of the PHONES L and R. If necessary, verify the frequency, output waveform, output level using a frequency counter, oscilloscope and AC voltmeter (with a JIS-C type filter).

Listed below are the specifications of the output during this test.(30 Ω load)

When MASTER VOLUME is set at maximum and the ACCOMP MAIN B switch is pressed:  
PHONES (R): -14.5 dBm ±2 dB                      PHONES (L): -14.5 dBm ±2 dB

When MASTER VOLUME is set at minimum and the ACCOMP MAIN B switch is pressed:  
PHONES (R): less than -82.0 dBm                      PHONES (L): less than -82.0 dBm

When MASTER VOLUME is set at maximum and the YES switch is pressed:  
PHONES (R): -14.5 dBm ±2 dB                      PHONES (L): less than -57.5 dBm

When MASTER VOLUME is set at maximum and the NO switch is pressed:  
PHONES (R): less than -57.5 dBm                      PHONES (L): -14.5 dBm ±2 dB

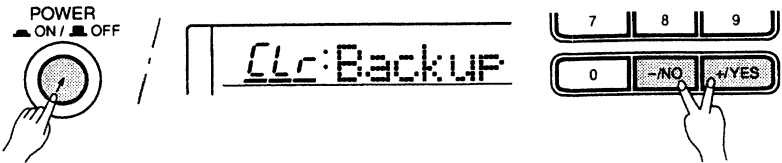
When MASTER VOLUME is set at minimum and no switch is pressed:  
PHONES (R): less than -78.5 dBm                      PHONES (L): less than -78.5 dBm

■ INITIALIZE

Except for the data listed below, all PSR-320/420 panel settings are reset to their initial settings whenever the power is turned on. The data listed below are backed up — i.e. retained in memory — as long as an AC adapter is connected or a set of batteries is installed.

• Data Initialization .....

All data can be initialized and restored to the factory preset condition by turning on the power while holding the [-/NO] and [+ /YES] buttons. "CLr Backup" will appear briefly on the display.



- Registration Memory
- Song Memory
- Remote Channel
- Keyboard Out
- Song Out
- Accomp Out
- External Clock



- All registration and song memory data, plus the other settings listed above, will be erased and/or changed when the data initialization procedure is carried out.
- If the PSR-320/420 has been "locked up" due to static electricity or other causes, turn the PSR-320/420 off and execute the initialize operation.

MIDI IMPLEMENTATION CHART

[Portable Keyboard]  
Model: PSR-320/420

MIDI Implementation Chart

Date: 1995. 3. 23  
Version: 0.112

Function	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1~16 CH 1~16 CH	1~16 CH (*0) 1~16 CH (*0)	
Mode Default Messages Altered	Mode 3 × *****	(*0) × ×	
Note Number : True voice	0~127 *****	0~127 0~127	
Velocity Note on Note off	○ 9nH, v=1~127 × 9nH, v=0	○ 9nH, v=1~127 × 9nH, v=0 or 8nH	
After key's Touch Ch's	× ×	× ×	
Pitch Bender	○	○	
Control Change 0, 32 1 6, 38 7 10 11 64 66 84 91 96 97 100, 101 120 121	○ (*1) ○ ○ ○ ○ ○ ○ × ○ ○ ○ × × ○ (*2) ○ ○ ×	○ (*1) ○ ○ ○ ○ ○ ○ ○ ○ (*7) ○ ○ ○ ○ (*2) ○ ○ (*3)	Bank select MSB, LSB Modulation depth Data entry MSB, LSB Volume Pan Expression Sustain Sostenuto Portamento control Ambience depth RPN data increment RPN data decrement RPN LSB, MSB All sound off Reset all controllers
Program Change : True #	○ 0~127 *****	○ 0~127 0~127	
System Exclusive	○ (*4)	○ (*4)	
System : Song Position : Song Select Common : Tune	× × ×	× × ×	
System : Clock Real Time : Commands	○ ○ (*6)	○ (*5) ×	
Aux : Local ON/OFF : All Notes Off Messages: Active Sense : Reset	× × ○ ×	× ○ ○ ×	

Mode 1: OMNI ON, POLY  
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO  
Mode 4: OMNI OFF, MONO

○: Yes  
×: No

- \*0 PSR-320/420 functions as 16 MIDI channel multi-timbral tone generator.  
The Remote Keyboard channel can be set by the panel settings.  
The designated channels on the PSR-320/420 can be controlled by an external device and receive all the data excepting the following control change data:  
Data entry, MSB, LSB  
Portamento control  
RPN data increment  
RPN data decrement  
RPN LSB, MSB
- \*1 Bank select transmission: The LSB is fixed at 00H.  
Bank select reception: The bank select MSB is used for melody voice and rhythm voice switching.  
MSB 00H: Melody voice.  
MSB 7FH: Rhythm voice.  
The bank select LSB is ignored.  
The bank select on the channel 10 is ignored.  
No voice change will occur when only a bank select is received.  
When a program change is received the latest bank select value is used.
- \*2 RPN transmits and receives the following data:  
Pitch bend sensitivity: BnH, 64H, 00H, 65H, 00H  
Fine tuning: BnH, 64H, 01H, 65H, 00H  
Coarse tuning: BnH, 64H, 02H, 65H, 00H  
Null: BnH, 64H, 7FH, 65H, 7FH
- \*3 Reset all controllers.  
Pitch bend, modulation, expression, sustain, sostenuto, and registered parameter number are returned to their default values.  
Portamento is reset.
- \*4 Exclusive.  
<GM1 System ON> F0H, 7EH, 7FH, 09H, 01H, F7H  
All parameters except MIDI Master Tuning are reset to their default values.  
<DISK ORCHESTRA ON> F0H, 43H, 73H, 01H, 14H, F7H  
<DISK ORCHESTRA OFF> F0H, 43H, 73H, 01H, 13H, F7H  
Disk Orchestra Collection disk can be played on the PSR-320/420 via an external FDD device.
- <MIDI Master Volume> F0H, 7FH, 7FH, 04H, 01H, 11, mm, F7H  
Allows the volume of all channels to be changed simultaneously (universal system exclusive).  
"mm" is used as the MIDI Master Volume value ("11" is ignored).  
The relation between MIDI Master Volume value and the actual volume is the same as the one between control change master volume value and the actual volume.  
The default value for "mm" is 7FH.
- <MIDI Master Tuning>  
F0H, 43H, 1nH, 27H, 30H, 00H, mm, 11, cc, F7H  
Allows the pitch of all channels to be changed simultaneously.  
"mm11" is used as the MIDI Master Tuning value, and the actual tuning value is represented as follows:  
T=M-128 (28<=M<=228)  
Where T is the actual tuning value in cents. M is decimal value represented by 1-byte using bits 0..3 of "mm" as the MSB and bits 0..3 of "11" as the LSB.  
The default values of "mm" and "11" are 08H and 00H, respectively.  
n and cc are also recognized.  
This value is not reset by a GM1 System On or Reset All Controllers message.
- <Panel Voice> F0H, 43H, 76H, 1B, cc, vv, F7H  
This message alternately selects Panel voice or GM voice.  
cc: MIDI channel  
vv: 00=GM voice mode, 01=Panel Voice mode  
The channel designated as the Remote Keyboard channel is fixed to Panel voice mode.
- <Bulk Dump>  
Song Memory:  
F0H, 43H, 76H, 20H, bl, bh, <DATA>, cs, F7H  
Registration Memory:  
F0H, 43H, 76H, 21H, bl, bh, <DATA>, cs, F7H  
"bl" and "bh" represent the total byte count as "bl + bh\*128".  
cs= Checksum.
- \*5 Internal/External clock selectable.
- \*6 Start/Stop messages is transmitted.
- \*7 Each channel receives the message (in Panel voice mode), but ignores the message if the channel is in GM voice mode.  
The relation between the ambience depth value and actual effect value is defined as follows:  
0~25:OFF, 26~81:1, 82~121:2, 122~127:3 (MAX)

GM System Level 1

The existing MIDI protocol allows performance and other data to be transferred between different instruments, even if they are from different manufacturers. This means, for example, that sequence data that was originally created to control a tone generator from manufacturer A can also be used to control a different tone generator from manufacturer B. Since the voice allocation in different devices from different manufacturers is usually different, however, appropriate program change data must be transmitted to select the right voices.

The General MIDI protocol was developed to minimize confusion and the need for re-programming when playing software created by one MIDI device on another. This has been achieved by defining a standard voice allocation in which the same or similar voices are accessed by the same program change numbers or MIDI channels. The current standard recognized by the International MIDI Association is known as "GM System Level 1." The PSR-320/420 voice allocation complies with the GM System Level 1 standard.



# PORTATONE

# PSR-320

# PARTS LIST

## ■ CONTENTS

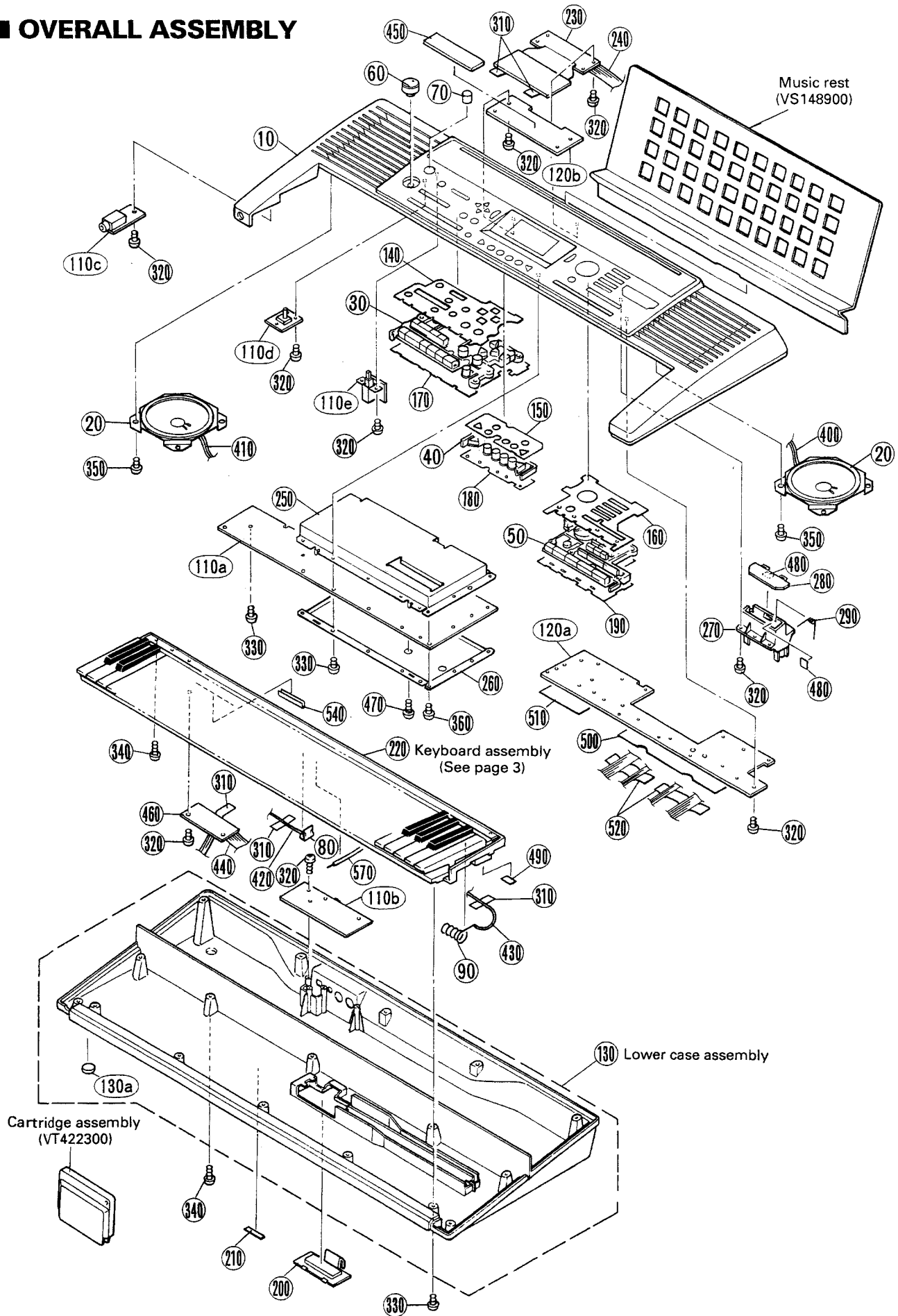
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## Note) DESTINATION ABBREVIATIONS

J : Japanese model	A : Australian model
U : U.S.A. model	E : European model
C : Canadian model	D : German model
X : General model	B : British model
M : South African model	I : Indonesian model
H : North European model	O : Chinese model

- The numbers with "pc. " or "pcs " in "Remarks " show quantities for each unit.
- The parts with "— —" in "Part No." are not available as spare parts.

# OVERALL ASSEMBLY

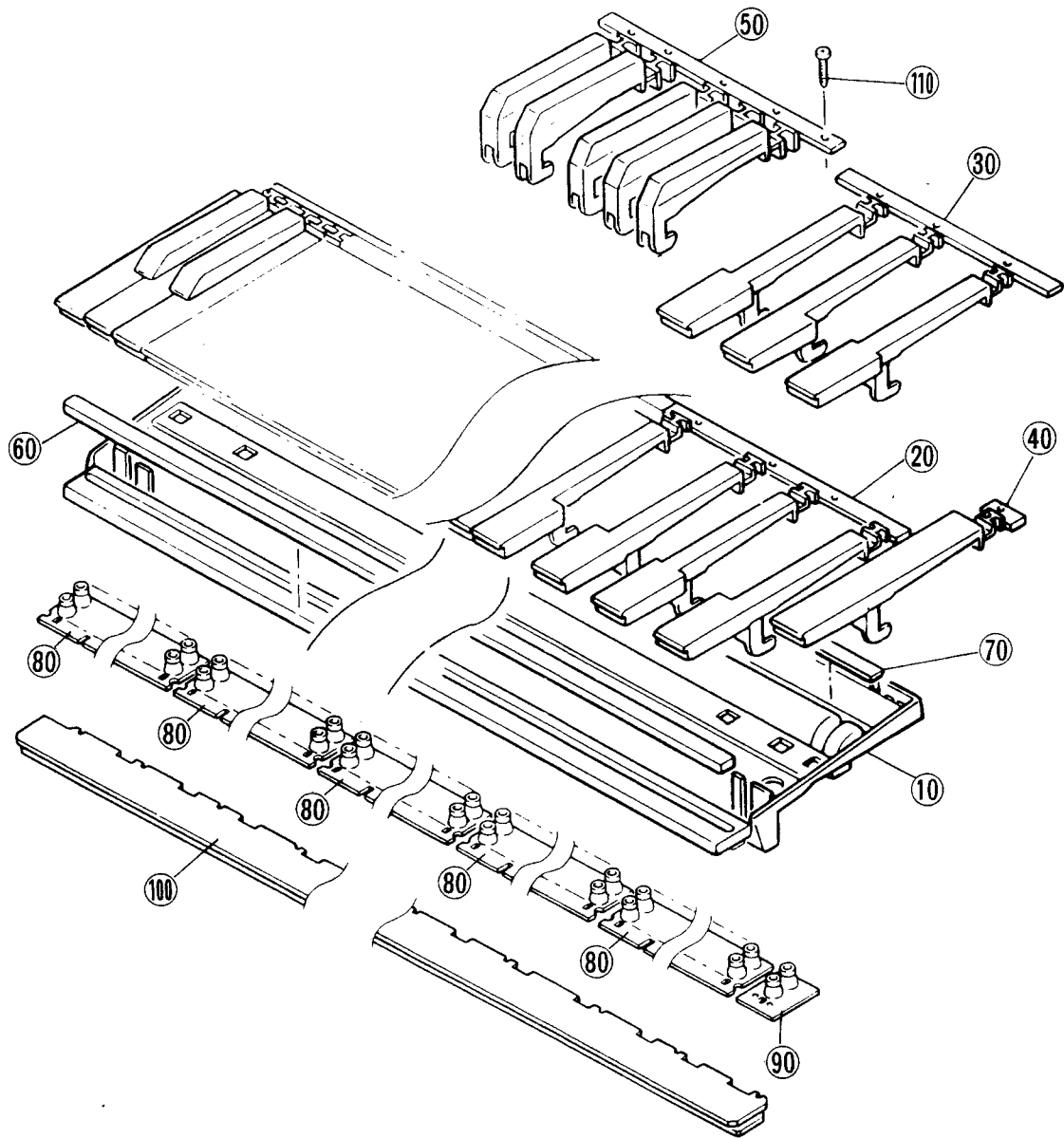


REF NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	ランク
		OVERALL ASSEMBLY		総 組 立	PSR320	
* 10	VT419400	Upper Case Assembly		上 ケース A s s y		
* 20	XN789800	Speaker	12.0cm 4ohm 5W	ス ピー カ		
* 30	VT368400	Key Top Rubber	D	キー トップ D 成 形 品	DEMO-ACCOMP	
* 40	VT368100	Key Top Rubber	B	キー トップ B 成 形 品	MEMORIZE-FREEZE	
* 50	VT368200	Key Top Rubber	C	キー トップ C 成 形 品	MODE-PAD4	
* 60	VQ218900	Knob	V	V ー ツ マ ミ	MASTER VOLUME	03
* 70	VQ218800	Knob		ブ ッ シ ュ ツ マ	POWER switch	03
* 80	VI663700	Battery Terminal	(+)	端 子		
* 90	VI865800	Spring Terminal	(-)	接 点		
* 100	VT521600	LCD Panel		L C D パ ネ ル		
* 110a	NX007170	Circuit Board	M	M シ ー ト	J	
* 110a	NX007120	Circuit Board	M	M シ ー ト	U,C,E	
* 110b	NX007180	Circuit Board	JACK	J A C K シ ー ト	J	
* 110b	NX007130	Circuit Board	JACK	J A C K シ ー ト	U,C,E	
* 110c	NX007190	Circuit Board	HP	H P シ ー ト	J	
* 110c	NX007140	Circuit Board	HP	H P シ ー ト	U,C,E	
* 110d	NX007200	Circuit Board	MVR	M V R シ ー ト	J	
* 110d	NX007150	Circuit Board	MVR	M V R シ ー ト	U,C,E	
* 110e	NX007210	Circuit Board	PSW	P S W シ ー ト	J	
* 110e	NX007160	Circuit Board	PSW	P S W シ ー ト	U,C,E	
* 120a	NX007320	Circuit Board	PN1/2	P N 1 / 2 シ ー ト		
* 120b	NX007330	Circuit Board	PN2/2	P N 2 / 2 シ ー ト		
* 130	VT420700	Lower Case Assembly		下 ケース A s s y		
* 130a	CB043750	Foot	BL T1.6	ゴ ム 足	5pcs	01
* 140	--	Vibration-proof Sheet	A-U	防 振 シ ー ト A - U	(VT42150)	
* 150	--	Vibration-proof Sheet	B-U	防 振 シ ー ト B - U	(VT42160)	
* 160	--	Vibration-proof Sheet	C-L	防 振 シ ー ト C - U	(VT42170)	
* 170	--	Vibration-proof Sheet	A-L	防 振 シ ー ト A - L	(VT42180)	
* 180	--	Vibration-proof Sheet	B-L	防 振 シ ー ト B - L	(VT42190)	
* 190	--	Vibration-proof Sheet	C-L	防 振 シ ー ト C - L	(VT42200)	
* 200	VM754600	Battery Cover Assembly		バッテリカバー A s s y		
* 210	--	Label		規 格 ・ 製 番 ラ ベ ル	(VT42040)	
* 220	VM894000	Keyboard Assembly	16L	1 6 L 鍵 盤 A s s y		28
* 230	VT426600	LCD	DMC-50577N-B	液 晶 デ ィ ス プ レ イ		12
* 240	VT705000	Connector Assembly	LCD	L C D 束 線 A s s y		
* 250	VT426700	Shield Box	U	シールドボックス U		06
* 260	VT426800	Shield Box	L	シールドボックス L		06
* 270	VT367600	Cartridge Guide		C A R T ガ イ ド 成 形 品		
* 280	VT368500	Cartridge Cover		C A R T 蓋 成 形 品		
* 290	VT422400	Spring		回 転 バ ネ		01
* 310	VA126100	Filament Tape	12X50	粘 着 テ ー プ	12pcs	03
* 320	EP600280	Bind Head Tapping Screw-P	3.0X8 MFZN2Y	+ バ イ ン ド P タ イ ト	47pcs	01
* 330	EP600300	Bind Head Tapping Screw-P	3.0X12 MFZN2Y	+ バ イ ン ド P タ イ ト	19pcs	01
* 340	VK228100	Bind Head Tapping Screw-P	3.0X25 MFZN2Y	+ バ イ ン ド P タ イ ト	4pcs	01
* 350	VB931600	Bind Head Tapping Screw-P	4.0X8 MFZN2BL	+ バ イ ン ド P タ イ ト	8pcs	01
* 360	VC069600	Bind Head Tapping Screw-B	2.6X6 MFZN2Y	+ バ イ ン ド B タ イ ト	7pcs	01
* 390a	--	Label	FCC・CE	F C C ・ C E シ ー ル	U,C,E	
* 390b	--	Label	CE	C E マ ー ク ラ ベ ル	J	
* 400	--	Connector Assembly	SP-R	S P 束 線 - R	(VT42850)	
* 410	--	Connector Assembly	SP-L	S P 束 線 - L	(VT42860)	
* 420	--	Connector Assembly	BATT(+)	電 池 線 - プ ラ ス	(VT42870)	
* 430	--	Connector Assembly	BATT(-)	電 池 線 - マ イ ナ ス	(VT42880)	
* 440	--	Connector Assembly	MKS	M K S 束 線 A s s y	(VT70510)	
* 450	VT617400	LCD Cushion		L C D ク ッ シ ョ ン		
* 460	VQ305200	Circuit Board	MKS	M K S シ ー ト		10
* 470	EP600310	Bind Head Tapping Screw-P	3.0X16 MFZN2Y	+ バ イ ン ド P タ イ ト	2pcs	01
* 480	--	Vibration-proof Tape	E	防 振 テ ー プ E	(VT70320)	
* 500	--	Insulation Sheet	A	フ ァ イ バ ー 紙 A	(VT80030)	
* 510	--	Insulation Sheet	B	フ ァ イ バ ー 紙 B	(VT80030)	
* 520	--	Filament Tape	19X70	粘 着 テ ー プ	(VF29880)	
* 540	--	Vibration-proof Tape	9X12	防 振 テ ー プ	(VM90570)	
* 560	--	Tape	120X20	綿 テ ー プ	(VT82640)	
* 570	--	GND Wire		ア ー ス 線	2pcs (VT85520)	
		ACCESSORIES		付 属 品		
* 90	VS148900	Music Rest		付 属 品		
* 130	VS276100	AC Adapter	PA-5B	A C ア ダ プ タ ー	J	11
* 190	VT865900	Japanese Guide Set	PSR320	和 文 シ ー ト	J	
* 220	VT422300	Cartridge Assembly		C A R T A s s y		

\* New Parts (新規部品)

ランク: Japan only

KEYBOARD ASSEMBLY



REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
10	VM894000	KEYBOARD ASSEMBLY	1 6 L 鍵盤 A s s y	PSR320	28
20	VH180900	Frame	フ レ ム	(VS15380)	03
30	VH181000	White Keys	白 鍵 C E G B	5pcs	03
40	VH181100	White Keys	白 鍵 D F A	5pcs	01
50	VH181200	White Key	白 鍵 C	1pc	03
60	VH181300	Black Keys	黒 鍵	5pcs	03
70	VH181400	Felt	フ ェ ル ト		03
80	VH181500	Rubber Sheet	ゴ ム シ ー ト		01
90	VH181600	Rubber Contact	接 点 ゴ ム	5pcs	05
100	VM894200	Rubber Contact	接 点 ゴ ム		03
110	EP600310	Circuit Board	MK シ ー ト サ ブ 束 線 付		19
		Bind Head Tapping Screw-P	+ バ イ ン ド P タ イ ト	21pcs	01

\* New Parts (新規部品)

ランク : Japan only

# ■ ELECTRICAL PARTS

REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
		ELECTRICAL PARTS			
	NX007170	Circuit Board	電 気 部 品	PSR320	
	NX007120	Circuit Board	M シ ー ト	J	
	NX007180	Circuit Board	M シ ー ト	U,C,E	
	NX007130	Circuit Board	J A C K シ ー ト	J	
			J A C K シ ー ト	U,C,E	
	NX007190	Circuit Board	H P シ ー ト	J	
	NX007140	Circuit Board	H P シ ー ト	U,C,E	
	NX007200	Circuit Board	M V R シ ー ト	J	
	NX007150	Circuit Board	M V R シ ー ト	U,C,E	
	NX007210	Circuit Board	P S W シ ー ト	J	
	NX007160	Circuit Board	P S W シ ー ト	U,C,E	
	VM894200	Circuit Board	MK シート サブ東線付		19
	VQ305200	Circuit Board	M K S シ ー ト		10
	NX007320	Circuit Board	P N 1 / 2 シ ー ト		
	NX007330	Circuit Board	P N 2 / 2 シ ー ト		
	NX007170	Circuit Board	M シ ー ト	J	
	NX007120	Circuit Board	M シ ー ト	U,C,E	
	NX007180	Circuit Board	J A C K シ ー ト	J	
	NX007130	Circuit Board	J A C K シ ー ト	U,C,E	
	NX007190	Circuit Board	H P シ ー ト	J	
	NX007140	Circuit Board	H P シ ー ト	U,C,E	
	NX007200	Circuit Board	M V R シ ー ト	J	
	NX007150	Circuit Board	M V R シ ー ト	U,C,E	
	NX007210	Circuit Board	P S W シ ー ト	J	
	NX007160	Circuit Board	P S W シ ー ト	U,C,E	
	EP600190	Bind Head Tapping Screw-B	+ バイ ン ド B タイ ト		01
	UA654220	Mylar Capacitor	マ イ ラ ー コ ン		01
	UA654470	Mylar Capacitor	マ イ ラ ー コ ン		01
	UA654560	Mylar Capacitor	マ イ ラ ー コ ン		
	FG612180	Ceramic Capacitor-B	セ ラ コ ン B		01
	FG612220	Ceramic Capacitor-B	セ ラ コ ン B		01
	FG612470	Ceramic Capacitor-B	セ ラ コ ン B		01
	FG613120	Ceramic Capacitor-B	セ ラ コ ン ( B )		
	FG651470	Ceramic Capacitor-SL	セ ラ コ ン ( S L )		
	FG644100	Ceramic Capacitor-F	セ ラ コ ン F		01
	VH285600	Ceramic Capacitor Array	セ ラ コ ン ア レ イ		02
	VT487100	Ceramic Capacitor Array	セ ラ コ ン ア レ イ		02
	U1528100	Electrolytic Cap.	ケ ミ コ ン		01
	U1537100	Electrolytic Cap.	ケ ミ コ ン		01
	U1566470	Electrolytic Cap.	ケ ミ コ ン		01
	UJ828100	Electrolytic Cap.	ケ ミ コ ン		01
	UJ837100	Electrolytic Cap.	ケ ミ コ ン		01
	UJ837330	Electrolytic Cap.	ケ ミ コ ン		01
	UJ837470	Electrolytic Cap.	ケ ミ コ ン		01
	UJ838470	Electrolytic Cap.	ケ ミ コ ン		01
	UJ848100	Electrolytic Cap.	ケ ミ コ ン		01
	UJ866100	Electrolytic Cap.	ケ ミ コ ン		01
	UJ749470	Electrolytic Cap.	ケ ミ コ ン		03
	UJ819100	Electrolytic Cap.	ケ ミ コ ン		01
	UN837100	Electrolytic Cap.-BP	B P ケ ミ コ ン		01
	VG694800	Semiconductive Cera. Cap.	半 導 体 セ ラ コ ン		01
	VH227500	Line Filter	ラ イ ン フ ィ ル タ ー		03
	HF753220	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF754220	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF754560	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF854680	Carbon Resistor	カ ー ボ ン 抵 抗	(HF75468)	01
	HF854820	Carbon Resistor	カ ー ボ ン 抵 抗	(HF75482)	01
	HF755150	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF755220	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF755270	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF755330	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF755560	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF755820	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF756100	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF756220	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF756270	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF756680	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF757100	Carbon Resistor	カ ー ボ ン 抵 抗		01
	HF757150	Carbon Resistor	カ ー ボ ン 抵 抗		01

\* New Parts (新規部品)

ランク : Japan only



REF NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	ランク
	HF757220	Carbon Resistor	22.0K 1/4 J	カ ー ボ ン 抵 抗		01
	HF757270	Carbon Resistor	27.0K 1/4 J	カ ー ボ ン 抵 抗		01
	HF757330	Carbon Resistor	33.0K 1/4 J	カ ー ボ ン 抵 抗		01
	HF757470	Carbon Resistor	47.0K 1/4 J	カ ー ボ ン 抵 抗		01
	HF758100	Carbon Resistor	100.0K 1/4 J	カ ー ボ ン 抵 抗		01
	HF758220	Carbon Resistor	220.0K 1/4 J	カ ー ボ ン 抵 抗		01
	HF858390	Carbon Resistor	390.0K 1/4 J	カ ー ボ ン 抵 抗	(HF75839)	01
	VF771900	Resistor Array	RGLE8X103J	抵 抗 ア レ イ		01
	XB247A00	IC	UPC4570HA	IC	OP AMP	01
	XM593A00	IC	LA4705	IC	POWER AMP 15W	06
	XL450A00	IC	PQ05RA1	IC	REGULATOR +5V	03
	XM993A00	IC	S-81250PG-T	IC	REGULATOR +5V	02
	XP515A00	IC	AN8005-(FTA)+5V	IC	REGULATOR +5V	02
	IR000400	IC	TC74HC04AP	IC	INVERTER	03
	IR001400	IC	TC74HC14AP	IC	S-INVERTER	05
	XG658A00	IC	TC74AC32P	IC	OR	02
	XQ693A00	IC	IC-PST993C-T	IC	RESET	01
	XQ375A00	IC	HD6413002FP16	IC	CPU <H8/3002>	09
	XQ696A00	IC	W24257-70LL	IC	SRAM 256K	08
	XQ697A00	IC	MX23C1610PC-12	IC	MASKED ROM 16M	12
	XR007A00	IC	UPC27C80010	IC	EPROM 8M (PRGRM	
	XM051A00	IC	PCM69AP-3	IC	DAC	07
	XQ200A00	IC	YMW258B-F	IC	GEW8S	10
	VQ670600	Push Switch	SDDLBI	ブ ッ シ ュ S W	POWER switch	03
	LB101870	Phone Jack	YKB21-5006	ホ ー ン ジ ャ ッ ク	PHONES	03
	VB312600	Phone Jack	YKB21-5012 BL	ホ ー ン ジ ャ ッ ク (黒)	SUSTAIN	02
	VC664500	DC IN Connector	HEC2305	電 源 コ ネ ク タ	DC IN 10-12V	01
	VJ107200	DIN Connector	5P YKF51-5050	D I N コ ネ ク タ	MIDI IN,OUT	01
	VI878200	Cable Holder	51048-4P TE	ケ ー ブ ル ホ ル ダ ー		01
	VI878300	Cable Holder	51048-5P TE	ケ ー ブ ル ホ ル ダ ー		01
	VI878400	Cable Holder	51048-6P TE	ケ ー ブ ル ホ ル ダ ー		01
	VI878500	Cable Holder	51048-7P TE	ケ ー ブ ル ホ ル ダ ー		01
	VK025100	Wire Trap	52147-7P TE	ワイヤートラップ		01
	VK026500	Wire Trap	52151-6P SE	ワイヤートラップ		01
	--	Wire Trap	52151-7P SE	ワイヤートラップ	(VK02660)	
	--	Wire Trap	52151-10P SE	ワイヤートラップ	(VK02690)	
	--	Wire Trap	52151-14P SE	ワイヤートラップ	(VK02730)	
	--	Connector	PSB4D30-2	P 基 板 用 コ ネ ク タ	(VT40210)	
	VJ532800	IC Socket	DICF-32CS-E	I C ソ ケ ッ ト		02
L101	VB835000	Coil	FL5R200QNT 20u	コ イ ル 2 0 U		01
L101	VF968800	Coil	SBT-0260TF 60u	コ イ ル S B 6 0 u H		01
CR101	VT487200	Ceramic Resonator	16M EFOEC1605T4	セラミック振動子		02
CR101	VT630600	Ceramic Resonator	16.0M CST16.00M	セラミック振動子		02
	VJ338000	Ceramic Resonator	9.40M CST9.40MTW	セラミック振動子		02
	VQ320200	Rotary Variable Resistor	A10Kx2	二 連 ロ ー タ リ ー V R	MASTER VOLUME	03
	IC1815M0	Transistor	2SC1815 Y,GR	ト ラ ン ジ ス タ		01
	VB941200	Diode	1SS133,1SS176	ダ イ オ ー ド		01
	VL723600	Diode	20E1-FC4	ダ イ オ ー ド		01
	VG181900	Photo Coupler	PC-900V	フ ォ ト カ プ ラ		03
	VT817300	Digital Transistor	DTB113ZS TP	デ ジ タ ル ト ラ ン ジ ス タ		
	VQ175600	Transistor	2SA(3CG)881Q	ト ラ ン ジ ス タ		
	VL456900	Heat Sink		放 熱 板		04
	--	Cushion	F	防 振 テ ー プ F	(VT70330)	
	--	Cushion	G	防 振 テ ー プ G	(VT70340)	
	VA078900	Jumper Wire	0.55	ジ ャ ン パ ー 線		
	--	Connector Assembly	VR 5P	V R 束 線 5 芯	CN902-CN903	
	--	Connector Assembly	HP 5P	H P 束 線 5 芯	CN904-CN905	
	--	Connector Assembly	SW 4P	S W 束 線 4 芯	CN906-CN907	
	--	Connector Assembly	JPF 8P	J P F 束 線 8 芯	CNJ1-CNJ2	
	--	Connector Assembly	PS 6P	P S 束 線 A S S Y	CN802-CN901	
	--	Connector Assembly	JK 7P	J K 束 線 A S S Y	CN102-CN801	
	VM894200	Circuit Board	MK	M K シ ー ト サ ブ 束 線 付	(XF656E0)	19
	VM893900	Diode	IN4148TY-P=20	ダ イ オ ー ド		
	--	Cushion		シ ー ト ・ ク ッ シ ョ ン	(VH58600)	
	--	Cable	11P	ケ ー ブ ル	(VL31910)	
	--	Cable	12P	ケ ー ブ ル	(VL31920)	
	VQ305200	Circuit Board	MKS	M K S シ ー ト	(XM324A0)	10
	VB840500	Ceramic Capacitor-SL	22P 50V J	円 筒 セ ラ ( S L )		01
	VK392400	Ceramic Capacitor-F	47000P 16V Z	円 筒 セ ラ ( F )		01

\* New Parts (新規部品)

ランク : Japan only

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# PORTATONE

# PSR-420

# PARTS LIST

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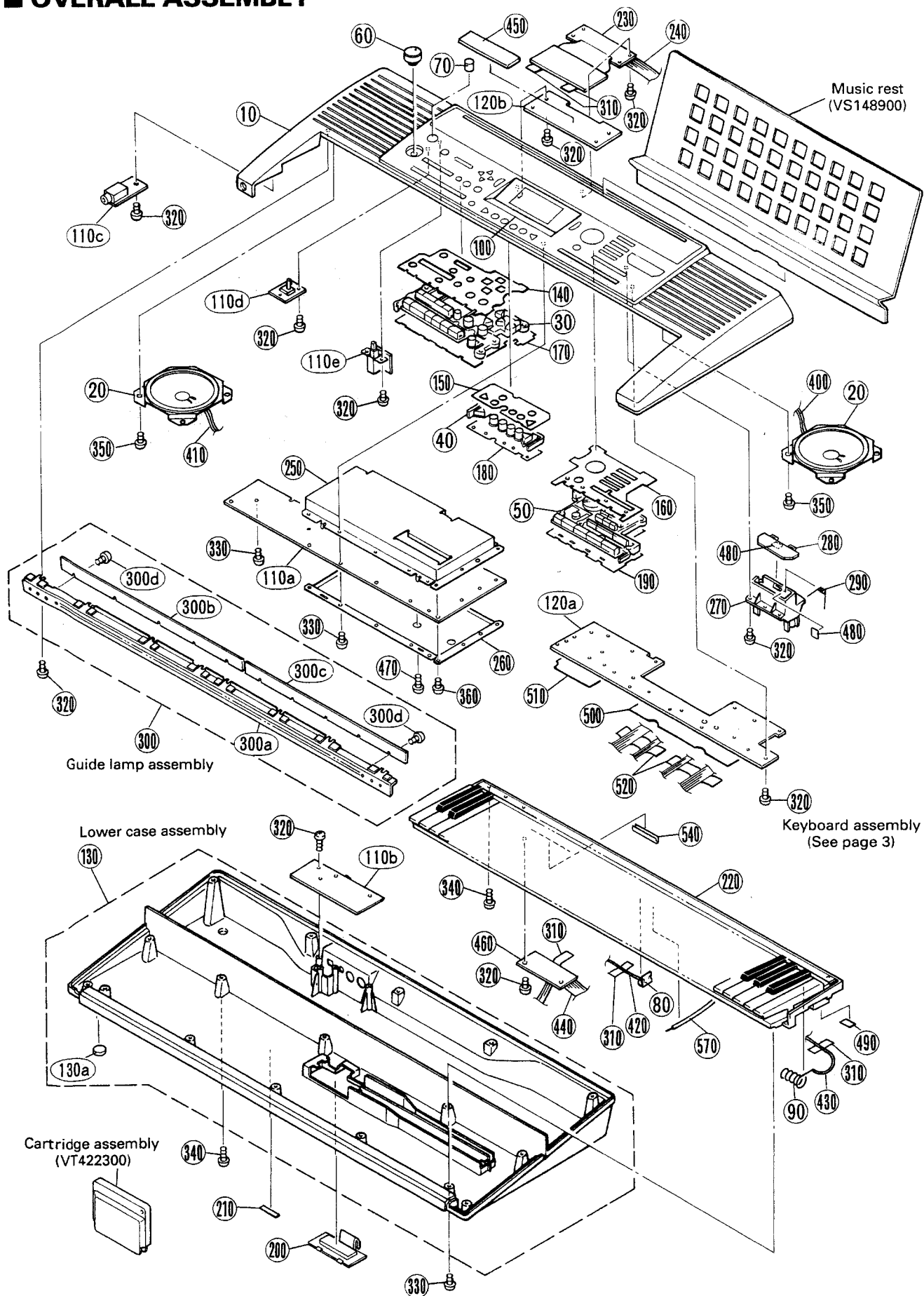
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## Note) DESTINATION ABBREVIATIONS

J : Japanese model	A : Australian model
U : U.S.A. model	E : European model
C : Canadian model	D : German model
X : General model	B : British model
M : South African model	I : Indonesian model
H : North European model	O : Chinese model

- The numbers with "pc." or "pcs" in "Remarks" show quantities for each unit.
- The parts with "—" in "Part No." are not available as spare parts.

# OVERALL ASSEMBLY

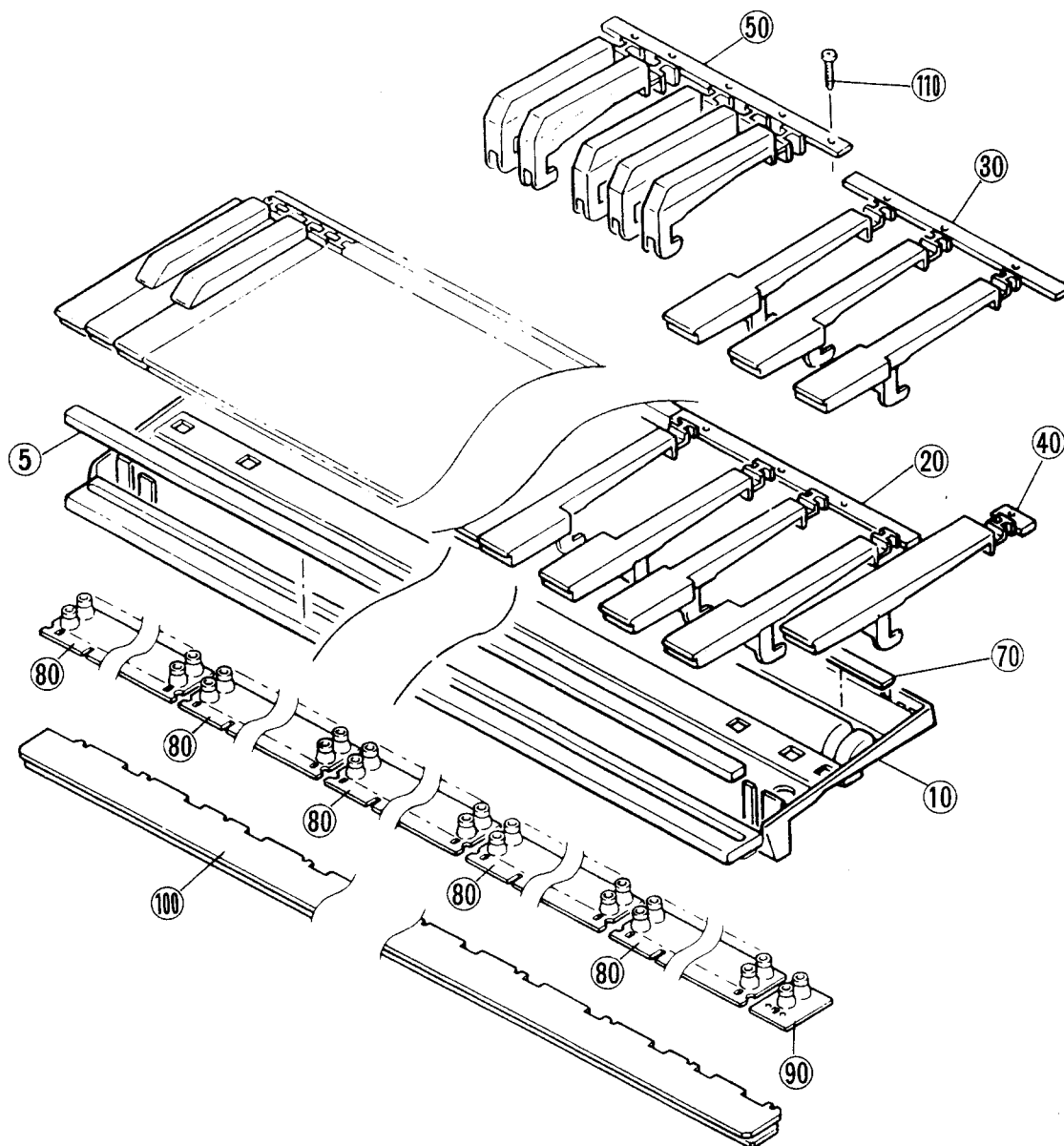


REF NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	ランク
10	VT419300	OVERALL ASSEMBLY		総組立	PSR420	
20	XN789800	Upper Case Assembly	12.0cm 4ohm 5W	上ケース A s s y		
30	VT368000	Speaker	A	スピーカ	2pcs	
40	VT368100	Key Top Rubber	B	キートップ B 成形品	DEMO-ACCOMP	
50	VT368200	Key Top Rubber	C	キートップ C 成形品	MEMORIZE-FREEZE	
60	VQ218900	Knob	V	V ツ マ	MODE-PAD4	
70	VQ218800	Knob	(+)	プッシュ ツ マ	MASTER VOLUME	03
80	V1663700	Battery Terminal	(-)	端子	POWER switch	03
90	V1865800	Spring Terminal		端点		
100	VT424800	LCD Panel		L C D パネル		
110a	NX007290	Circuit Board	M	シート	J	
110a	NX007240	Circuit Board	M	シート	U,C,E	
110b	NX007300	Circuit Board	JACK	J A C K シート	J	
110b	NX007250	Circuit Board	JACK	J A C K シート	U,C,E	
110c	NX007310	Circuit Board	HP	H P シート	J	
110c	NX007260	Circuit Board	HP	H P シート	U,C,E	
110d	NX007320	Circuit Board	MVR	M V R シート	J	
110d	NX007270	Circuit Board	MVR	M V R シート	U,C,E	
110e	NX007330	Circuit Board	PSW	P S W シート	J	
110e	NX007280	Circuit Board	PSW	P S W シート	U,C,E	
120a	NX007340	Circuit Board	PN1/2	P N 1 / 2 シート		
120b	NX007350	Circuit Board	PN2/2	P N 2 / 2 シート		
130	VT420700	Lower Case Assembly		下ケース A s s y		
130a	CB043750	Foot	BL T1.6	ゴム足	5pcs	01
140	--	Vibration-proof Sheet	A-U	防振シート A - U	(VT42150)	
150	--	Vibration-proof Sheet	B-U	防振シート B - U	(VT42160)	
160	--	Vibration-proof Sheet	C-L	防振シート C - U	(VT42170)	
170	--	Vibration-proof Sheet	A-L	防振シート A - L	(VT42180)	
180	--	Vibration-proof Sheet	B-L	防振シート B - L	(VT42190)	
190	--	Vibration-proof Sheet	C-L	防振シート C - L	(VT42200)	
200	VM754600	Battery Cover Assembly		バッテリーカバー A s s y		
210	--	Label		規格, 製番ラベル	(VT42010)	
220	VM894000	Keyboard Assembly	16L	16L 鍵盤 A s s y		28
230	VT426600	LCD	DMC-50577N-B	液晶ディスプレイ		12
240	VT705000	Connector Assembly		L C D 束線		
250	VT426700	Shield Box		シールドボックス U		06
260	VT426800	Shield Box		シールドボックス L		06
270	VT367600	Cartridge Guide		C A R T ガイド 成形品		
280	VT368500	Cartridge Cover		C A R T 蓋 成形品		
290	VT422400	Spring		回転バネ		01
300	--	Guide Lamp Assembly		ガイドランプ A s s y	(VT42220)	
300a	VT367800	Key Guide		鍵盤ガイド 成形品		
300b	VT380300	Circuit Board	GL1	G L 1 シート		
300c	VT380400	Circuit Board	GL2	G L 2 シート		
300d	EP620100	Bind Head Tapping Screw-P	2.6X8 MFZN2Y	+ バインド P タイ	10pcs	01
300e	--	Fiber Washer	t=0.5	ファイバーワッシャー	10pcs	(VT82630)
310	VA126100	Filament Tape	12X50	粘着テープ	12pcs	03
320	EP600280	Bind Head Tapping Screw-P	3.0X8 MFZN2Y	+ バインド P タイ	47pcs	01
330	EP600300	Bind Head Tapping Screw-P	3.0X12 MFZN2Y	+ バインド P タイ	19pcs	01
340	VK228100	Bind Head Tapping Screw-P	3.0X25 MFZN2Y	+ バインド P タイ	4pcs	01
350	V8931600	Bind Head Tapping Screw-P	4.0X8 MFZN2BL	+ バインド P タイ	8pcs	01
360	VC069600	Bind Head Tapping Screw-B	2.6X6 MFZN2Y	+ バインド B タイ	7pcs	01
400	--	Connector Assembly	SP-R	S P 束線 - R	(VT42850)	
410	--	Connector Assembly	SP-L	S P 束線 - L	(VT42860)	
420	--	Connector Assembly	BATT(+)	電池線 - プラス	(VT42870)	
430	--	Connector Assembly	BATT(-)	電池線 - マイナス	(VT42880)	
440	--	Connector Assembly	MKS	M K S 束線	(VT70510)	
450	VT617400	LCD Cushion		L C D クッション		
460	VQ305200	Circuit Board	MKS	M K S シート		10
470	EP600310	Bind Head Tapping Screw-P	3.0X16 MFZN2Y	+ バインド P タイ	2pcs	01
480	VT703200	Vibration-proof Tape	E	防振テープ E	2pcs	
500	--	Insulation Sheet	A	ファイバー紙 A	(VT80030)	
510	--	Insulation Sheet	B	ファイバー紙 B	(VT80030)	
520	--	Filament Tape	19X70	粘着テープ	3pcs	(VF29880)
540	--	Vibration-proof Tape	9X12	防振テープ	(VM90970)	
560	--	Tape	120X20	防綿テープ	(VT82640)	
570	--	GND Wire		アース線	2pcs	(VT85520)
ACCESSORIES				付属品		
	VS148900	Music Rest		譜面立て		
	VS276100	AC Adapter	PA-5B	A C アダプター	J	11
	VT865800	Japanese Guide Sheet		和文シート		
	VT422300	Cartridge Assembly		C A R T A s s y		

\* New Parts (新規部品)

ランク: Japan only 2

# ■ KEYBOARD ASSEMBLY



REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
	VM894000	KEYBOARD ASSEMBLY	1 6 L 鍵盤 A s s y	PSR420	28
10	—	Frame	フ レ ム	(VS15380)	
20	VH180900	White Keys	白 鍵 C E G B	5pcs	03
30	VH181000	White Keys	白 鍵 D F A	5pcs	03
40	VH181100	White Key	白 鍵 C	1pc.	01
50	VH181200	Black Keys	黒 鍵	5pcs	03
60	VH181300	Felt	フ ェ ル ト		03
70	VH181400	Rubber Sheet	ゴ ム シ ー ト		01
80	VH181500	Rubber Contact	接 点 ゴ ム	5pcs	05
90	VH181600	Rubber Contact	接 点 ゴ ム		03
100	VM894200	Circuit Board	MK シ ー ト サ ブ 束 線 付		19
110	EP600310	Bind Head Tapping Screw-P	+ バ イ ン ド P タ イ ト	21pcs	01

\* New Parts (新規部品)

ランク : Japan only



# ■ ELECTRICAL PARTS

REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
	NX007290	ELECTRICAL PARTS	電 気 部 品	PSR420	
	NX007240	Circuit Board	M シ ー ト	J	
	NX007300	Circuit Board	M シ ー ト	U,C,E	
	NX007250	Circuit Board	J A C K シ ー ト	J	
	NX007310	Circuit Board	J A C K シ ー ト	U,C,E	
	NX007260	Circuit Board	H P シ ー ト	J	
	NX007320	Circuit Board	H P シ ー ト	U,C,E	
	NX007270	Circuit Board	M V R シ ー ト	J	
	NX007330	Circuit Board	M V R シ ー ト	U,C,E	
	NX007280	Circuit Board	P S W シ ー ト	J	
	VT380300	Circuit Board	P S W シ ー ト	U,C,E	
	VT380400	Circuit Board	G L 1 シ ー ト		
	VQ305200	Circuit Board	G L 2 シ ー ト		
	VM894200	Circuit Board	M K S シ ー ト		10
	NX007340	Circuit Board	M K シ ー ト サブ束線付		19
	NX007350	Circuit Board	P N 1 / 2 シ ー ト		
			P N 2 / 2 シ ー ト		
	NX007290	Circuit Board	M シ ー ト	J	
	NX007240	Circuit Board	M シ ー ト	U,C,E	
	NX007300	Circuit Board	J A C K シ ー ト	J	
	NX007250	Circuit Board	J A C K シ ー ト	U,C,E	
	NX007310	Circuit Board	H P シ ー ト	J	
	NX007260	Circuit Board	H P シ ー ト	U,C,E	
	NX007320	Circuit Board	M V R シ ー ト	J	
	NX007270	Circuit Board	M V R シ ー ト	U,C,E	
	NX007330	Circuit Board	P S W シ ー ト	J	
	NX007280	Circuit Board	P S W シ ー ト	U,C,E	
	EP600190	Bind Head Tapping Screw-2	3.0X8 MFZN2BL	＋バインド T P 2 種溝	01
	UA654220	Mylar Capacitor	0.0220 50V J	マ イ ラ ー コ ン	01
	UA654470	Mylar Capacitor	0.0470 50V J	マ イ ラ ー コ ン	01
	UA654560	Mylar Capacitor	0.0560 50V J	マ イ ラ ー コ ン	01
	FG612180	Ceramic Capacitor-B	180P 50V K	セ ラ コ ン B	
	FG612220	Ceramic Capacitor-B	220P 50V K	セ ラ コ ン B	01
	FG612470	Ceramic Capacitor-B	470P 50V K	セ ラ コ ン B	01
	FG613120	Ceramic Capacitor-B	1200P 50V K	セ ラ コ ン ( B )	
	FG651470	Ceramic Capacitor-SL	47P 50V J	セ ラ コ ン ( S L )	
	FG644100	Ceramic Capacitor-F	0.0100 50V Z	セ ラ コ ン F	01
	VH285600	Ceramic Capacitor Array	470P 50V M	セ ラ コ ン ア レ イ	02
	VT487100	Ceramic Capacitor Array	470P X12	セ ラ コ ン ア レ イ	02
	U1528100	Electrolytic Cap.	100.00 10.0V	ケ ミ コ ン	01
	U1537100	Electrolytic Cap.	10.00 16.0V	ケ ミ コ ン	01
	U1566470	Electrolytic Cap.	4.70 50.0V	ケ ミ コ ン	01
	UJ828100	Electrolytic Cap.	100.00 10.0V	ケ ミ コ ン	01
	UJ837100	Electrolytic Cap.	10.00 16.0V	ケ ミ コ ン	01
	UJ837330	Electrolytic Cap.	33.00 16.0V	ケ ミ コ ン	01
	UJ837470	Electrolytic Cap.	47.00 16.0V	ケ ミ コ ン	01
	UJ838470	Electrolytic Cap.	470.00 16.0V	ケ ミ コ ン	01
	UJ848100	Electrolytic Cap.	100.00 25.0V	ケ ミ コ ン	01
	UJ866100	Electrolytic Cap.	1.00 50.0V	ケ ミ コ ン	01
	UJ749470	Electrolytic Cap.	4700 25.0V	ケ ミ コ ン	03
	UJ819100	Electrolytic Cap.	1000 6.3V	ケ ミ コ ン	01
	UN837100	Electrolytic Cap.-BP	10.00 16.0V	B P ケ ミ コ ン	01
	VC694800	Semiconductive Cera. Cap.	0.1000 25V Z	半 導 体 セ ラ コ ン	01
	VH227500	Line Filter	SU10VD-10020	ラ イ ン フ ィ ル タ ー	03
	HF753220	Carbon Resistor	2.2 1/4 J	ガ ー ボ ン 抵 抗	01
	HF754220	Carbon Resistor	22.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF754560	Carbon Resistor	56.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF854680	Carbon Resistor	68.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF854820	Carbon Resistor	82.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF755150	Carbon Resistor	150.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF755220	Carbon Resistor	220.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF755270	Carbon Resistor	270.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF755330	Carbon Resistor	330.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF755560	Carbon Resistor	560.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF755820	Carbon Resistor	820.0 1/4 J	カ ー ボ ン 抵 抗	01
	HF756100	Carbon Resistor	1.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF756220	Carbon Resistor	2.2K 1/4 J	カ ー ボ ン 抵 抗	01
	HF756270	Carbon Resistor	2.7K 1/4 J	カ ー ボ ン 抵 抗	01
	HF756680	Carbon Resistor	6.8K 1/4 J	カ ー ボ ン 抵 抗	01

\* New Parts (新規部品)

ランク: Japan only

REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
	HF757100	Carbon Resistor	10.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF757150	Carbon Resistor	15.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF757220	Carbon Resistor	22.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF757270	Carbon Resistor	27.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF757330	Carbon Resistor	33.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF757470	Carbon Resistor	47.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF758100	Carbon Resistor	100.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF758220	Carbon Resistor	220.0K 1/4 J	カ ー ボ ン 抵 抗	01
	HF858390	Carbon Resistor	390.0K 1/4 J	カ ー ボ ン 抵 抗	01
	VF771900	Resistor Array	RGLE8X103J	抵 抗 ア レ イ	01
	XB247A00	IC	UPC4570HA	OP AMP	01
	XM593A00	IC	LA4705	POWER AMP 15W	06
	XL450A00	IC	PQ05RA1	REGULATOR +5V	03
	XM993A00	IC	S-81250PG-T	REGULATOR +5V	02
	XP515A00	IC	AN8005-(FTA)+5V	REGULATOR +5V	02
	IR000400	IC	TC74HC04AP	INVERTER	03
	IR001400	IC	TC74HC14AP	S-INVERTER	05
	IR017400	IC	TC74HC174AP	D-FF	05
	XG658A00	IC	TC74AC32P	OR	02
	XQ693A00	IC	IC-PST993C-T	RESET	01
	XQ375A00	IC	HD6413002FP16	CPU <H8/3002>	09
	XQ696A00	IC	W24257-70LL	SRAM 256K	08
	XQ697A00	IC	MX23C1610PC-12	MASKED ROM 16M	12
	XR008A00	IC	UPC27C80010	EPROM 8M (PRGRM	
	XM051A00	IC	PCM69AP-3	DAC	07
	XQ200A00	IC	YMW258B-F	GEW8S	10
	VQ670600	Push Switch	SDDL1B1	POWER switch	03
	LB101870	Phone Jack	YKB21-5006	PHONES	03
	VB312600	Phone Jack	YKB21-5012 BL	SUSTAIN	02
	VC664500	DC IN Connector	HEC2305	DC IN 10-12V	01
	VJ107200	DIN Connector	5P YKF51-5050	MIDI IN,OUT	01
	VI878200	Cable Holder	51048-4P TE		01
	VI878300	Cable Holder	51048-5P TE		01
	VI878400	Cable Holder	51048-6P TE		01
	VI878500	Cable Holder	51048-7P TE		01
	VK025100	Wire Trap	52147-7P TE		01
	VK026300	Wire Trap	52151-4P SE		01
	VK026500	Wire Trap	52151-6P SE		01
	--	Wire Trap	52151-7P SE		
	VK026700	Wire Trap	52151-8P SE		01
	--	Wire Trap	52151-10P SE		
	--	Wire Trap	52151-14P SE		
	--	Connector	PSB4D30-2		
	VJ532800	IC Socket	DICF-32CS-E		02
L101	VB835000	Coil	FL5R200QNT 20u		01
L101	VF968800	Coil	SBT-0260TF 60u		01
CR101	VT487200	Ceramic Resonator	16M EFOEC1605T4		02
CR101	VT630600	Ceramic Resonator	16.0M CST16.00M		
	VJ338000	Ceramic Resonator	9.40M CST9.40MTW		02
	VQ320200	Rotary Variable Resistor	A10Kx2		03
	TC1815M0	Transistor	2SC1815 Y,GR		01
	VI707900	Transistor Array	ULN2803A		03
	VB941200	Diode	1SS133,1SS176		01
	VL723600	Diode	20E1-FC4		01
	VG181900	Photo Coupler	PC-900V		03
	VT817300	Digital Transistor	DTB113ZS TP		
	VQ175600	Transistor	2SA(3CG)881Q		
	VL456900	Heat Sink			04
	--	Cushion	F		
	--	Cushion	G		
	VA078900	Jumper Wire	0.55		
	--	Connector Assembly	VR 5P		
	--	Connector Assembly	HP 5P		
	--	Connector Assembly	SW 4P		
	--	Connector Assembly	JPF 8P		
	--	Connector Assembly	PS 6P		
	--	Connector Assembly	JK 7P		
	VT380300	Circuit Board	GL1		
	VT525600	LED	SLR-342MGTC7 GR		01

\* New Parts (新規部品)

ランク : Japan only

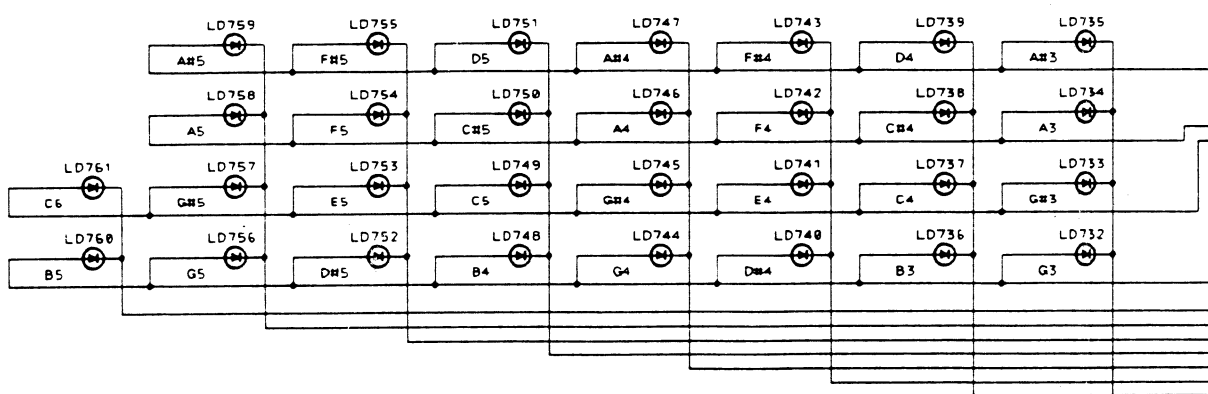
REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ラング
	VT525700	LED	SLR-342VRTC7 RE	L E D	White keys (18pcs)
	VT704700	Connector Assembly	GL L-8	G L 束 線 A s s ' y	01
	VT704900	Connector Assembly	GL L-4	G L 束 線 A s s ' y	
	VT380400	Circuit Board	GL2	G L 2 シ ー ト	(XQ406A0)
	VT525600	LED	SLR-342MGTC7 GR	L E D	Black keys (12pcs)
	VT525700	LED	SLR-342VRTC7 RE	L E D	White keys (18pcs)
	VT704800	Connector Assembly	GL R-8	G L 束 線 A s s ' y	01
	VT704900	Connector Assembly	GL L-4	G L 束 線 A s s ' y	
	VM894200	Circuit Board	MK	M K シ ー ト サブ束線付	(VQ32760)
	VM893900	Diode	IN4148TY-P=20	ダ イ オ ー ド	
	--	Cushion		シ ー ト ・ ク ッ シ ョ ン	(VH58600)
	--	Cable	11P	ケ ー ブ ル	(VL31910)
	--	Cable	12P	ケ ー ブ ル	(VL31920)
	VQ305200	Circuit Board	MKS	M K S シ ー ト	(XM324A0)
	VD840500	Ceramic Capacitor-SL	22P 50V J	円 筒 セ ラ ( S L )	01
	VK392400	Ceramic Capacitor-F	47000P 16V Z	円 筒 セ ラ ( F )	01
	VL409500	Coil	BL03RN2-R62T4 0.45	コ イ ル 0 . 4 5 U	01
	VL674500	Resistor Array	RGLE12X223J	抵 抗 ア レ イ	01
	XJ450A00	IC	HD63B05V0D73P	イ ン テ ー グ レ ー ト	CPU
	VF728300	Connector	52147-6P TE	コ ネ ク タ	07
	VK025500	Wire Trap	52147-11P TE	ワ イ ヤ ー ト ラ ッ プ	01
	VK025600	Wire Trap	52147-12P TE	ワ イ ヤ ー ト ラ ッ プ	01
	--	Vibration-proof Tape	10X64X0.5	防 振 テ ー プ	(VK34680)
	UJ828100	Electrolytic Cap.	100.00 10.0V	ケ ー ミ コ ン	01
	HF756470	Carbon Resistor	4.7K 1/4 J	カ ー ボ ン 抵 抗	01
	HF757470	Carbon Resistor	47.0K 1/4 J	カ ー ボ ン 抵 抗	01
CR1	VN002100	Ceramic Resonator	CST8.00MTW140	セ ラ ミ ッ ク 振 動 子	02
CRT	VQ305500	Ceramic Resonator	8.00M EFOEC8004T3	セ ラ ミ ッ ク 振 動 子	02
	NX007340	Circuit Board	PN1/2	P N 1 / 2 シ ー ト	(XQ404C0)
	NX007350	Circuit Board	PN2/2	P N 2 / 2 シ ー ト	(XQ404C0)
	VT415700	Light Touch Switch	EVQ PKE 05B	ラ イ ト タ ッ チ S W 4 端 子	01
	VI878500	Cable Holder	51048-7P TE	ケ ー ブ ル ホ ル ダ ー	01
	VI878800	Cable Holder	51048-10P TE	ケ ー ブ ル ホ ル ダ ー	01
	VL644200	Diode	IN4148TY-P=10	ダ イ オ ー ド	
	VT387900	LED	SLZ-190B-10-T2	L E D	01
	--	Connector Assembly	PN2 7P	P N 束 線 2 7 芯	to DM-CN506
	--	Connector Assembly	PN1 10P	P N 束 線 1 1 0 芯	to DM-CN505
20	XN789B00	Speaker	12.0cm 4ohm 5W	ス ピ ー カ	2pcs
230	VT426600	LCD	DMC-50577N-B	液 晶 デ ィ ス プ レ イ	12

\* New Parts (新規部品)

ランク : Japan only

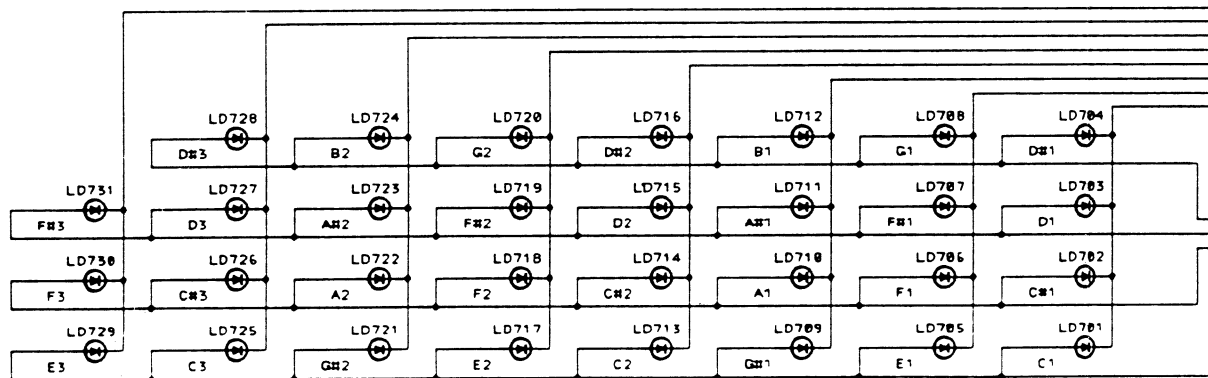
# PSR-320/PSR-420 OVERALL CIRCUIT DIAGRAM

7 (Keyboard guide lamps section : PSR-420 only)

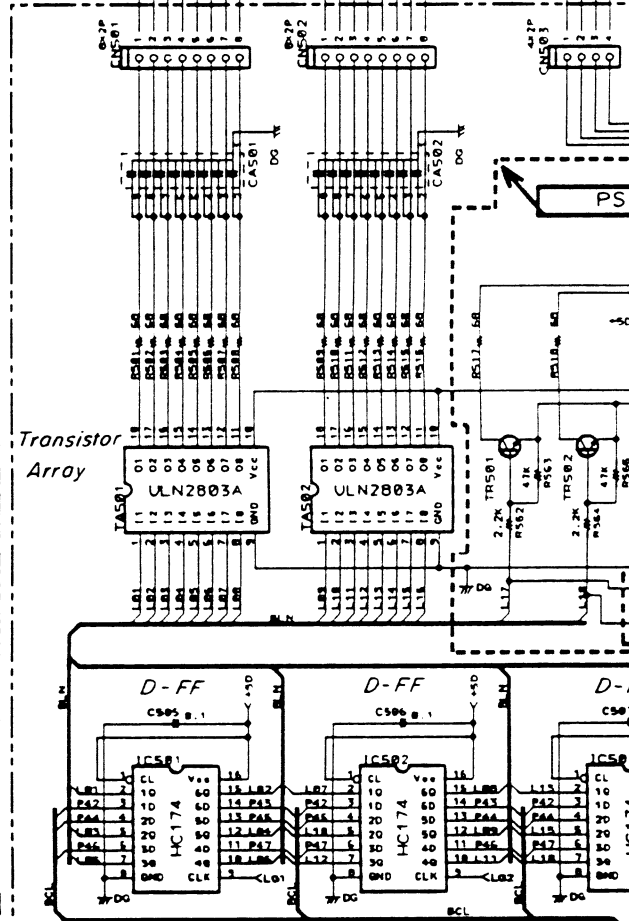


GL 2 (High notes)

GL 1 (Low notes)

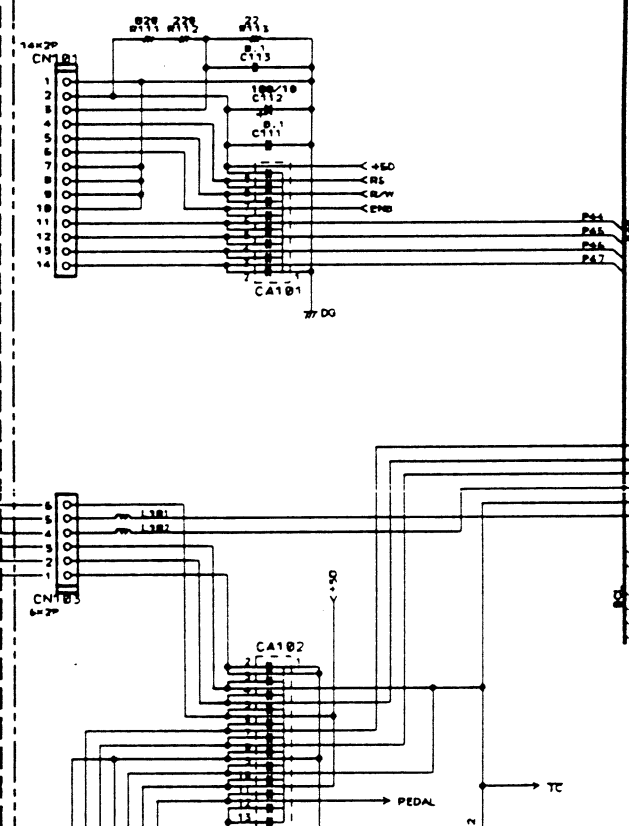


※ When digital transistor, DTB113ZS is used as TR 503-TR505, jumper wire is installed to R566, R567, R568, R569, R570, R571, R572, R573 and R574.



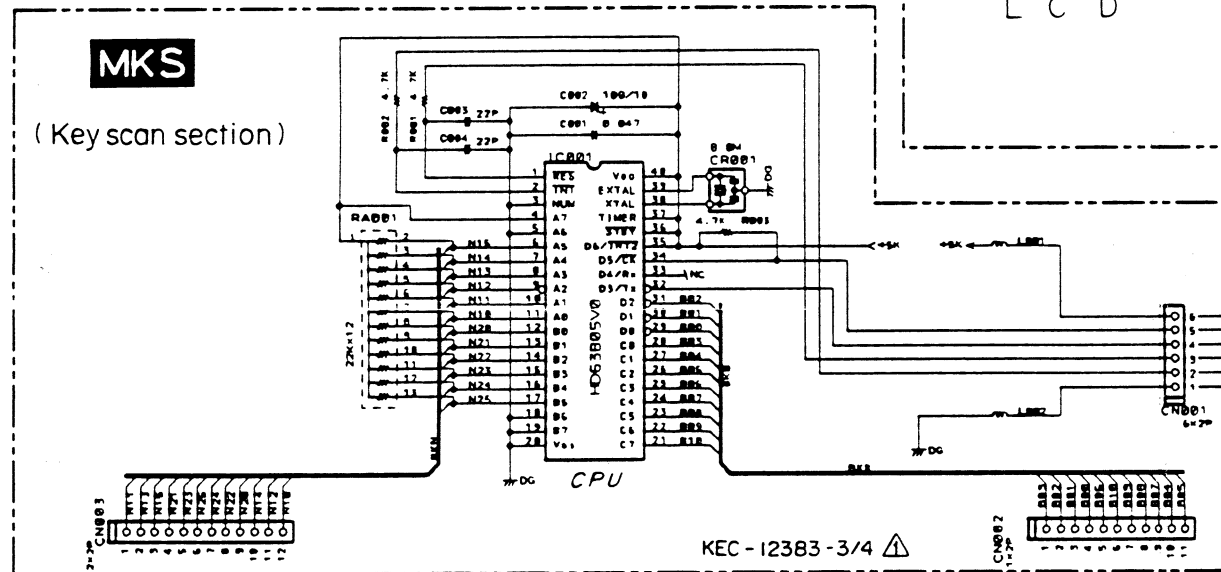
M

1 (CPU section)

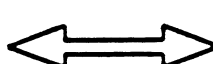


MKS

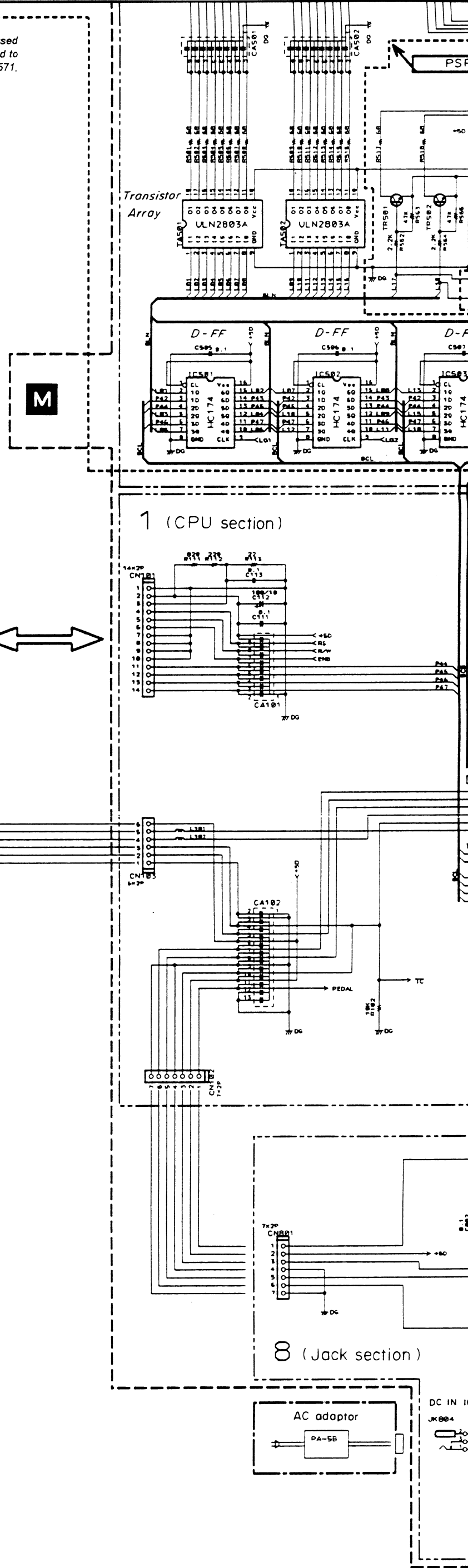
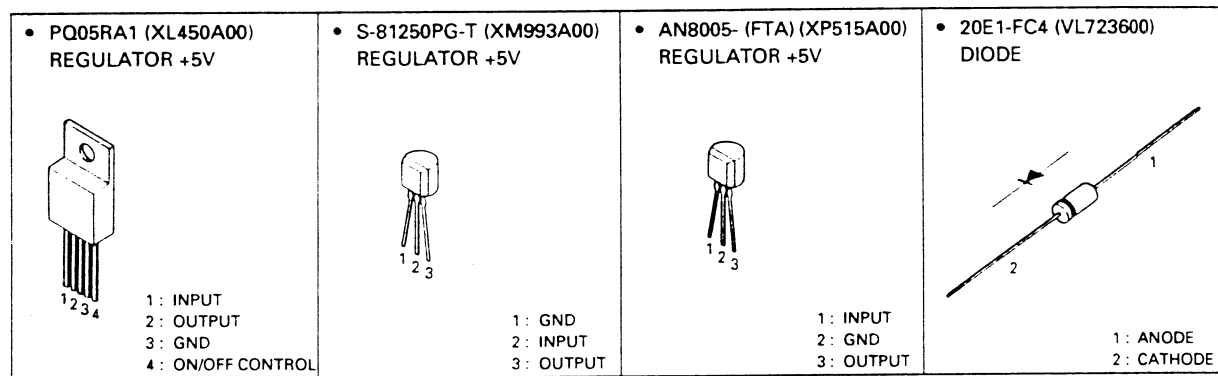
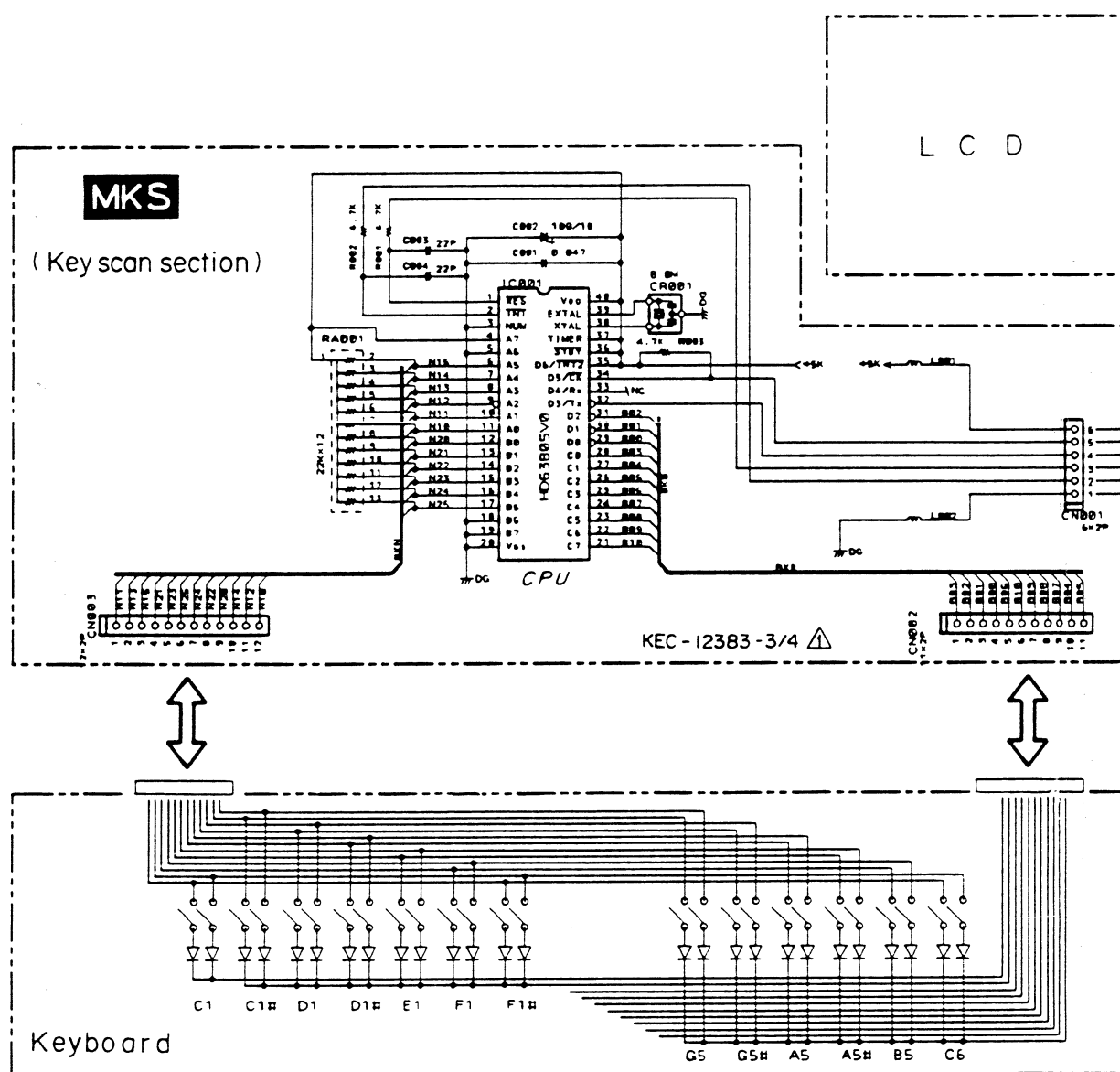
(Key scan section)

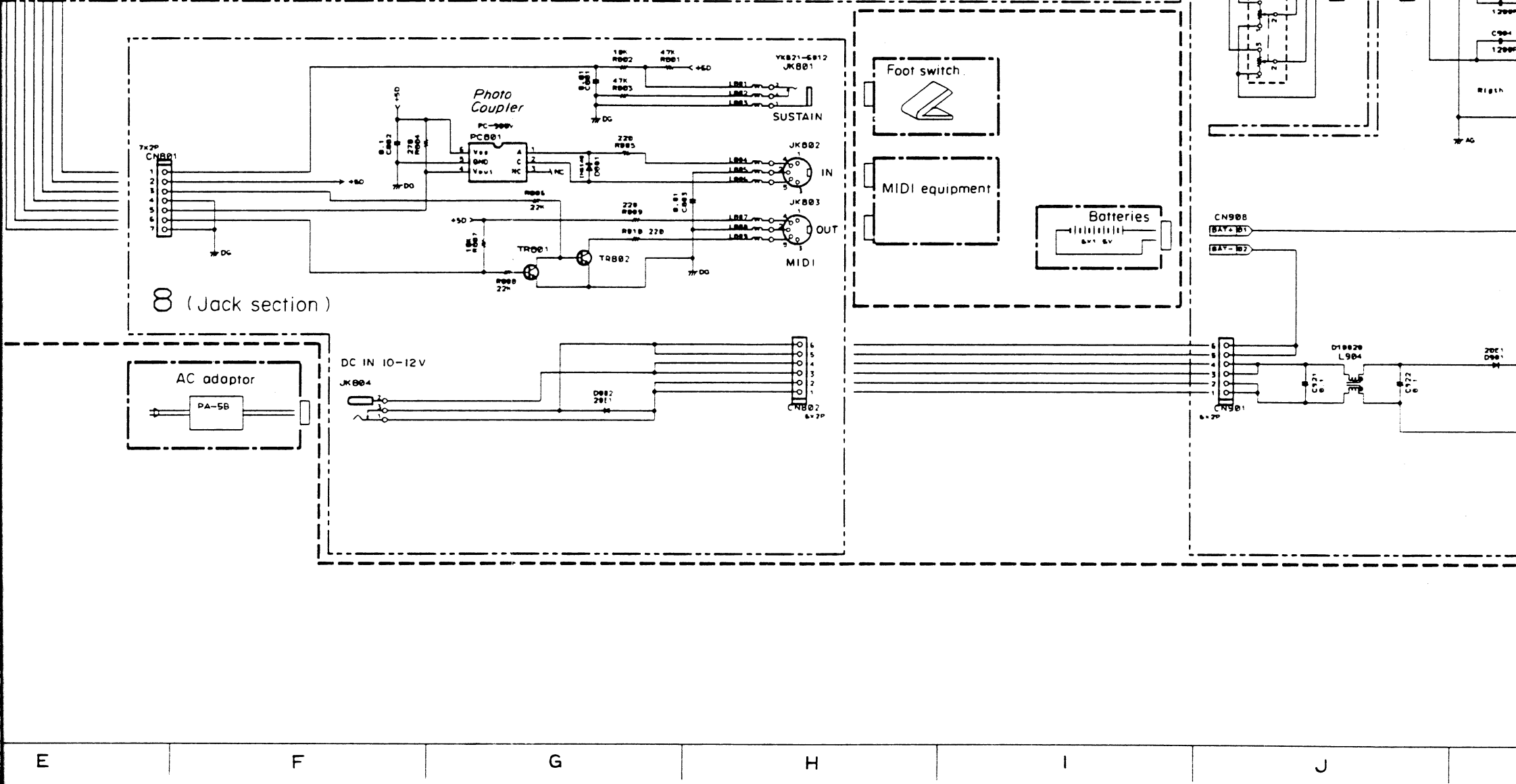
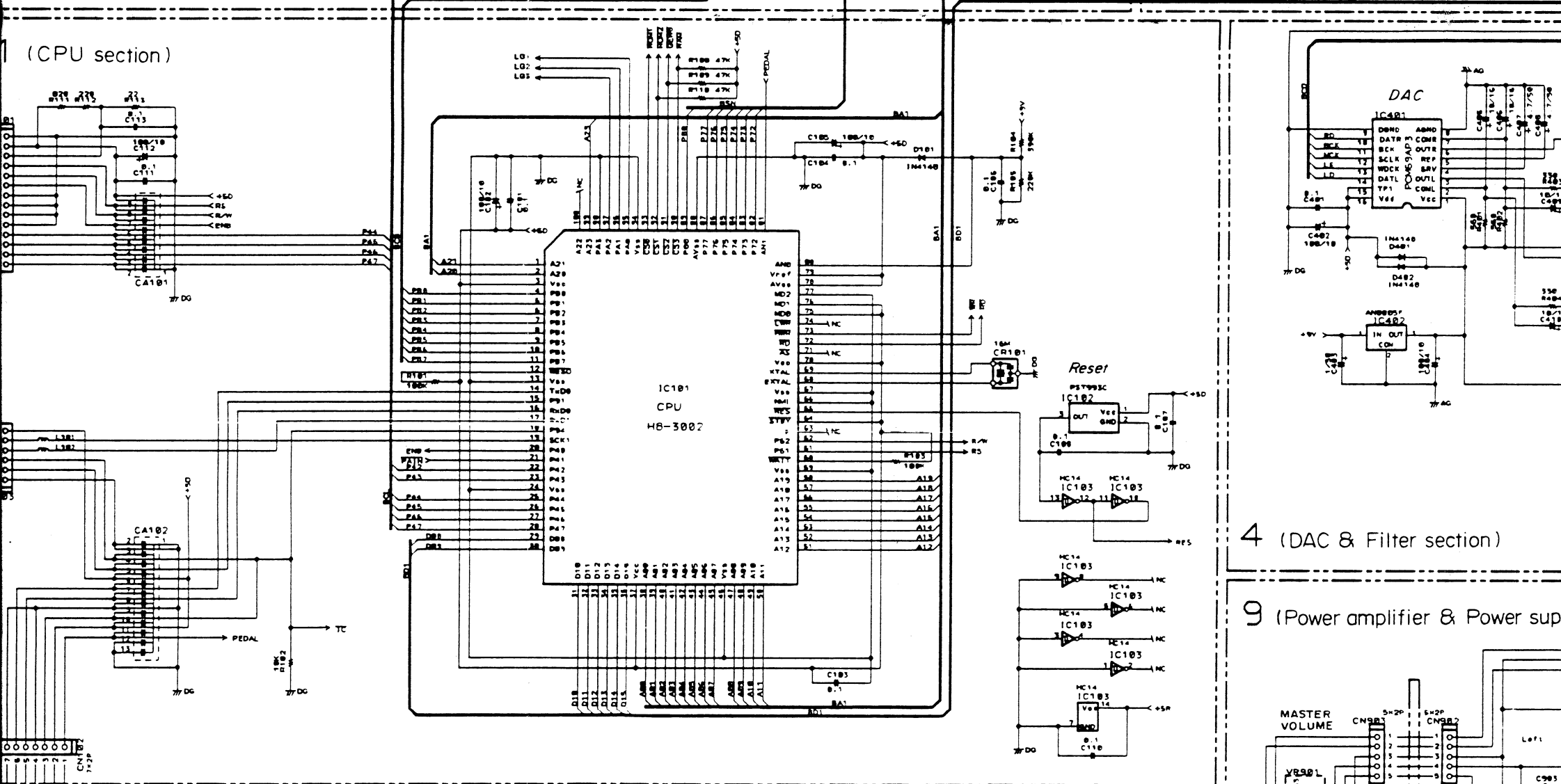
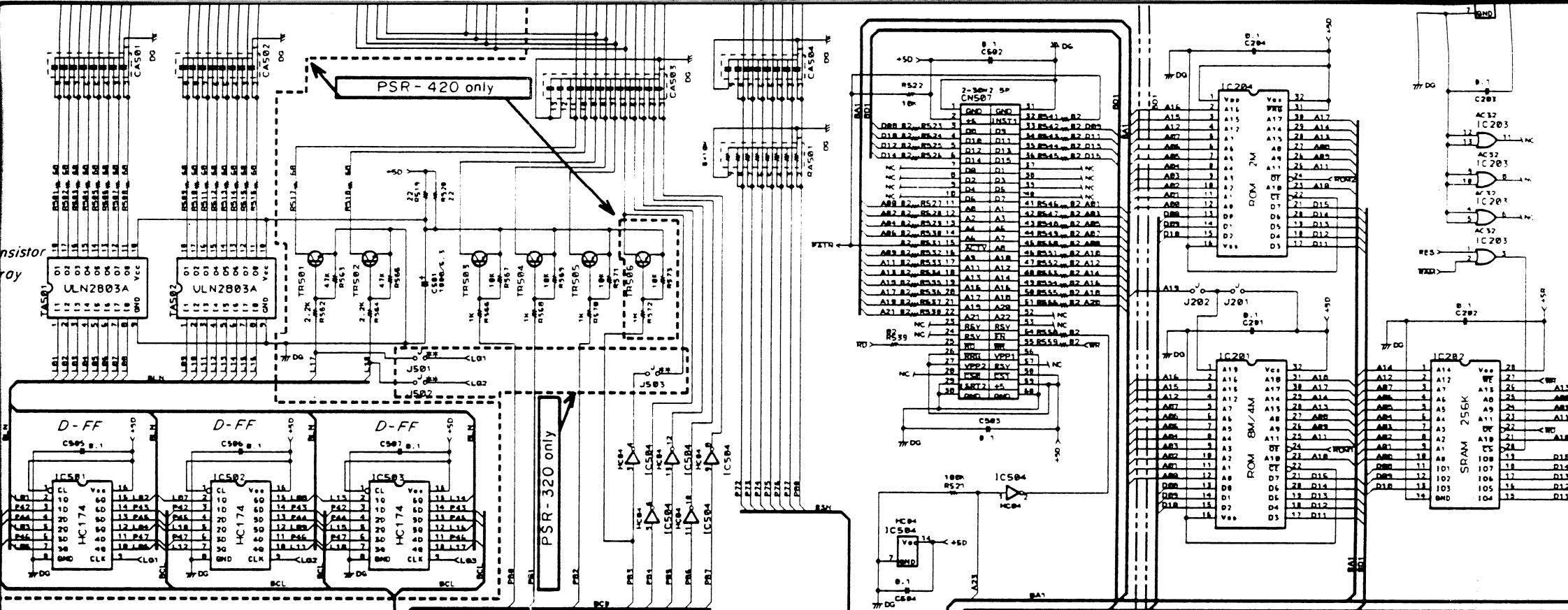


L C D

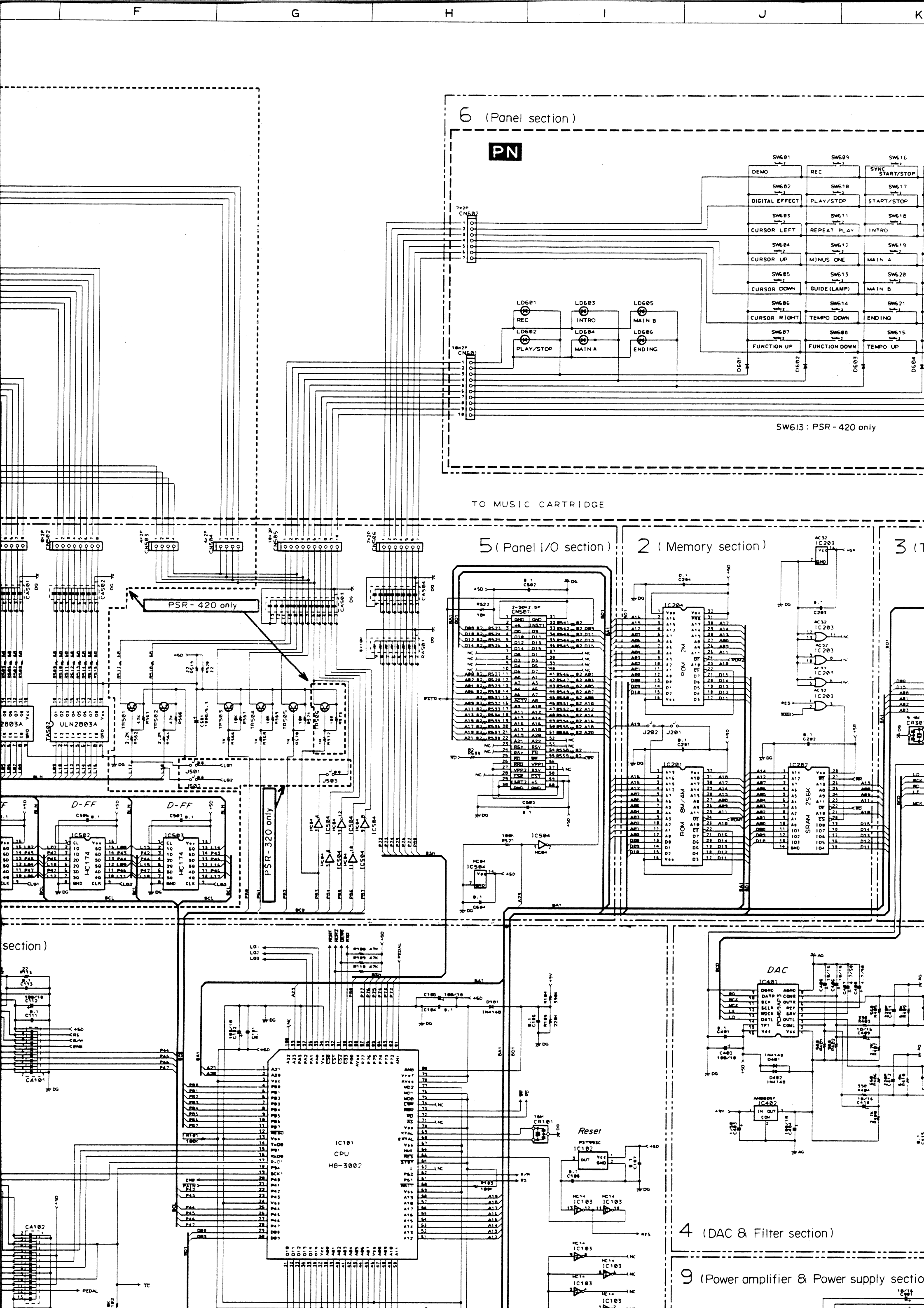


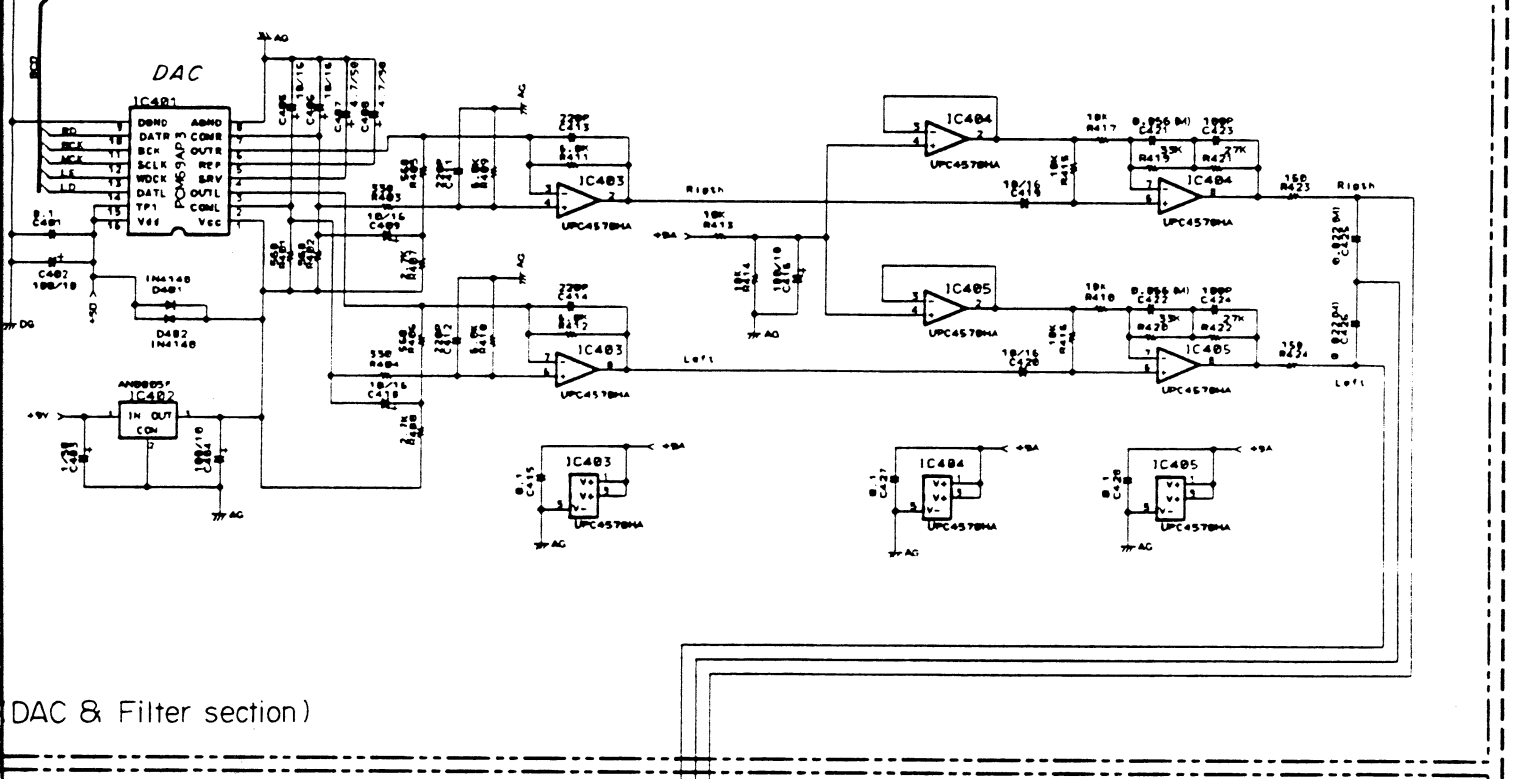
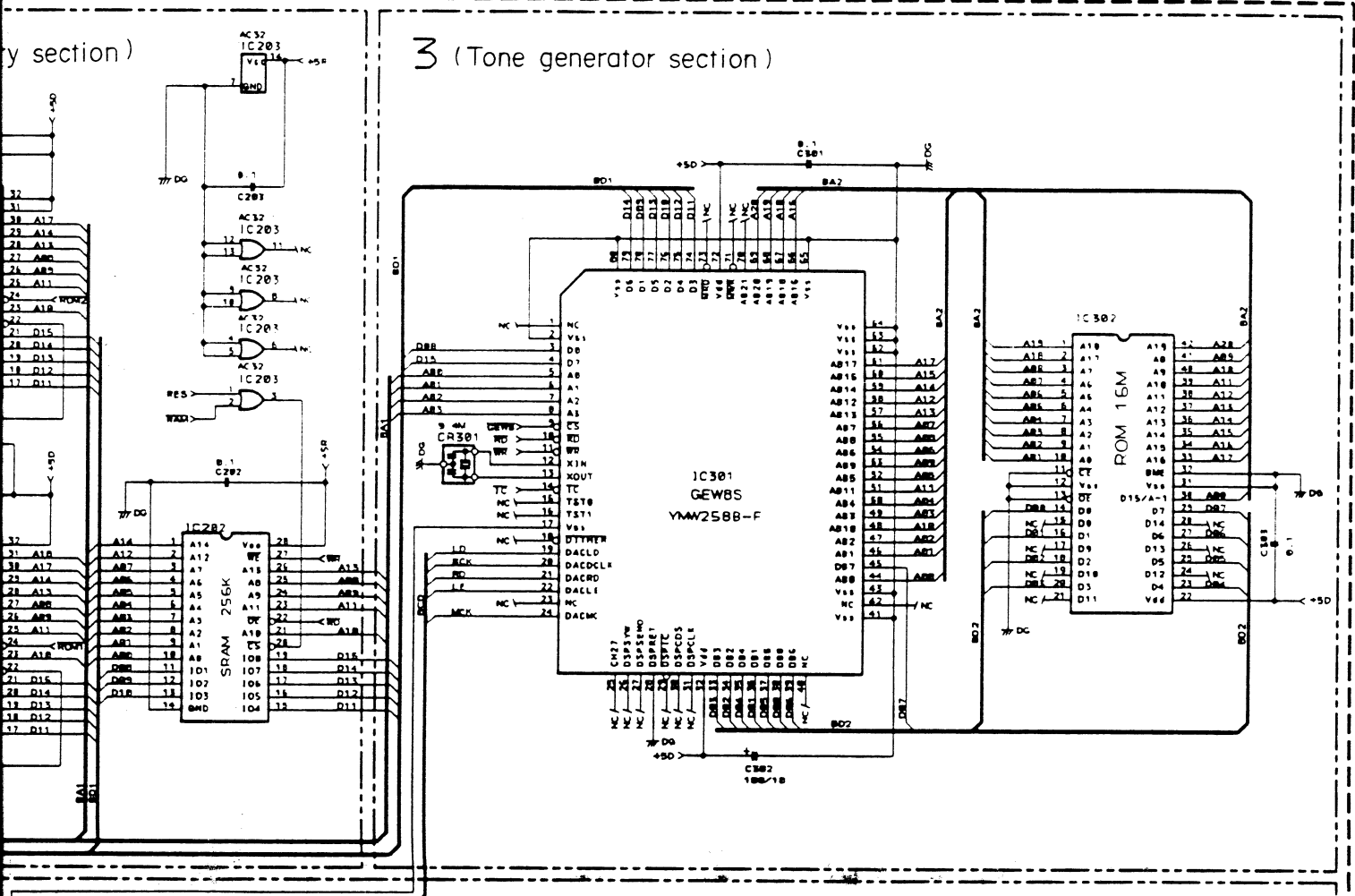
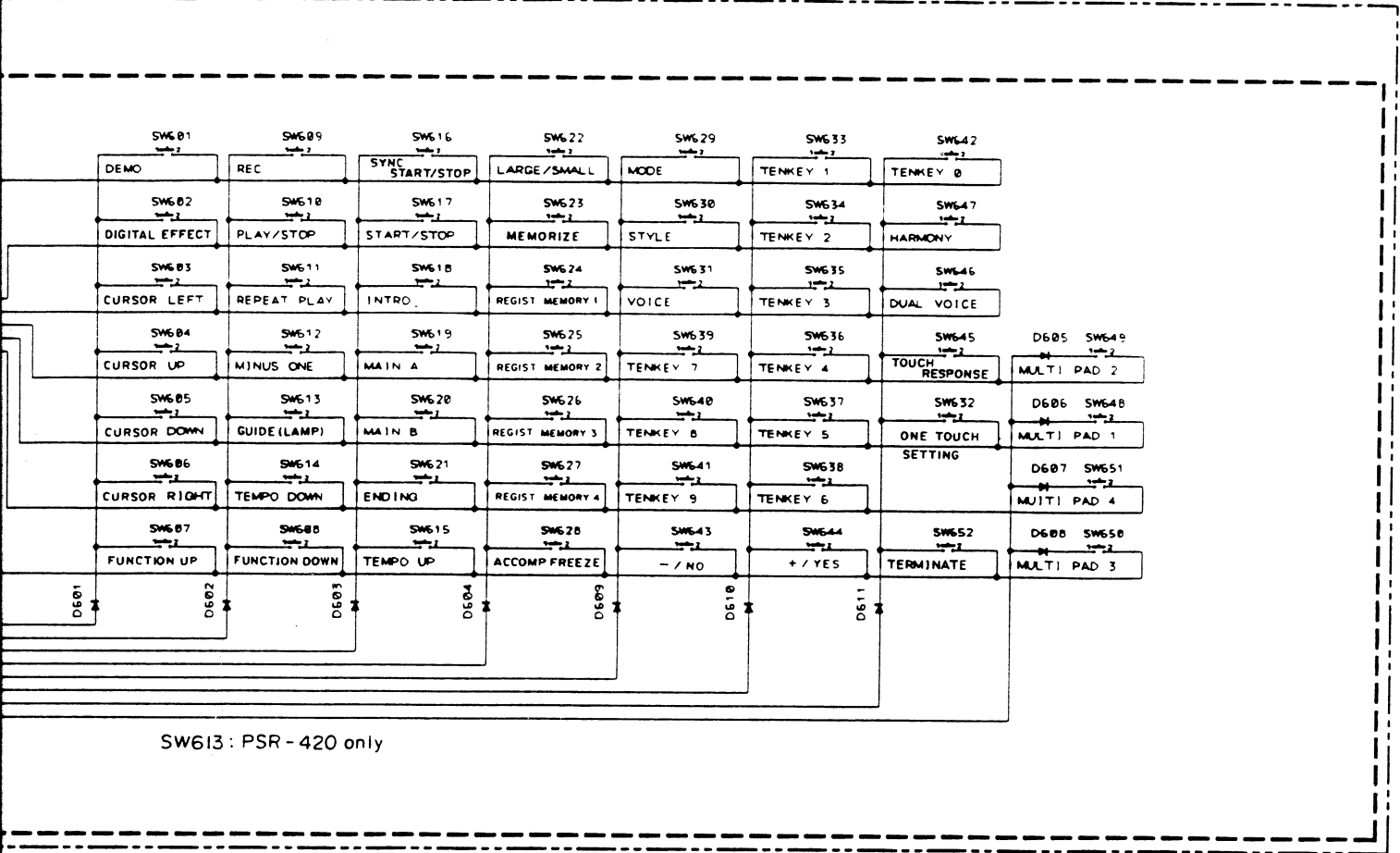
※ When digital transistor, DTB1132S is used as TR 503-TR505, jumper wire is installed to R566, R567, R568, R569, R570, R571, R572, R573 and R574.





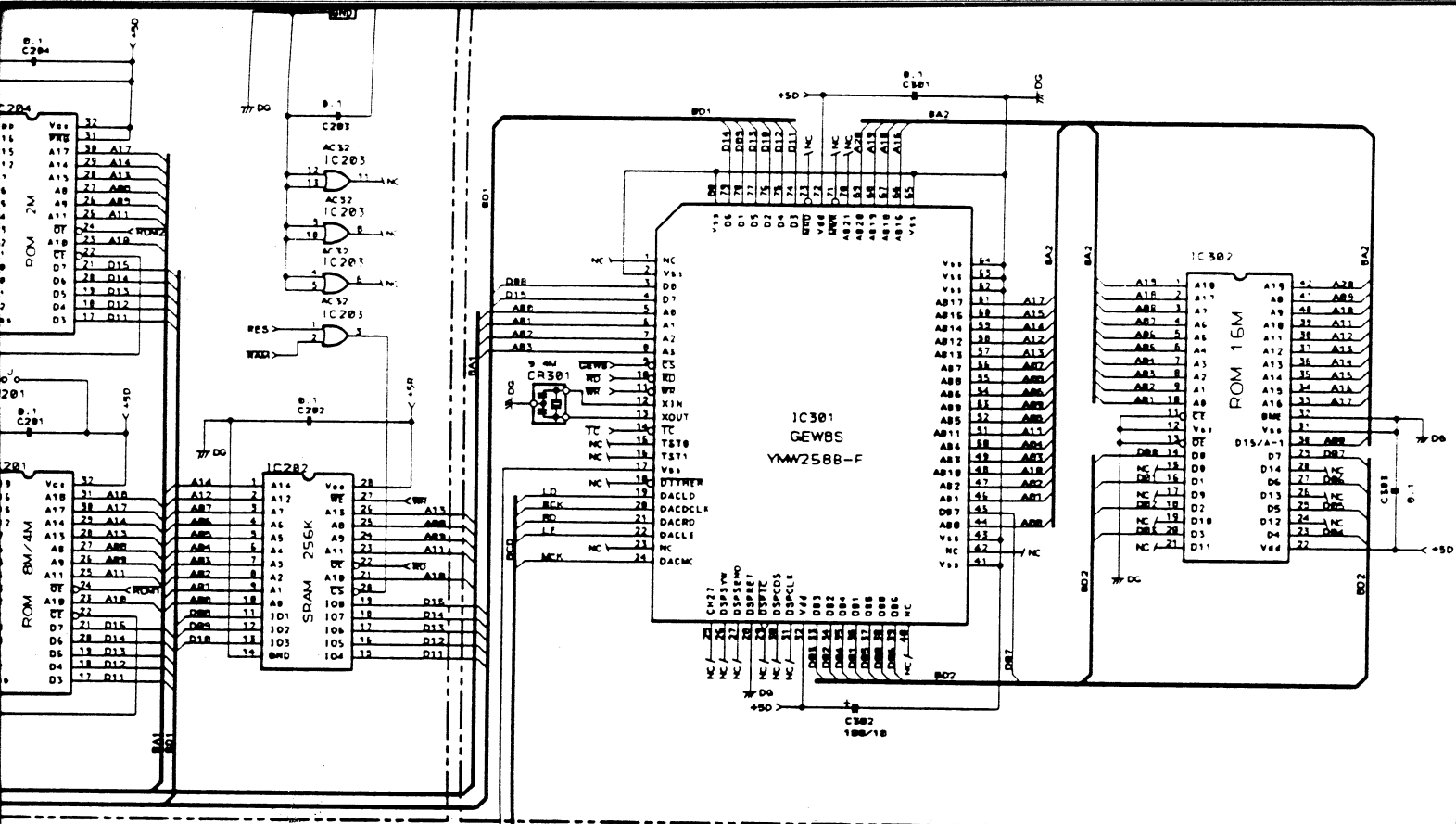






- Notes)
- PSR-320
- Circuit Board: M (NX007170) J (XQ410C0)  
M (NX007120) U,C,E (XQ41030)  
JACK (NX007180) J (XQ410C0)  
JACK (NX007130) U,C,E (XQ41030)  
HP (NX007190) J (XQ410C0)  
HP (NX007140) U,C,E (XQ41030)  
MVR (NX007200) J (XQ410C0)  
MVR (NX007150) U,C,E (XQ41030)  
PSW (NX007210) J (XQ410C0)  
PSW (NX007160) U,C,E (XQ41030)
- PSR-420
- Circuit Board: M (NX007290) J (XQ410B0)  
M (NX007240) U,C,E (XQ41020)  
JACK (NX007300) J (XQ410B0)  
JACK (NX007250) U,C,E (XQ41020)  
HP (NX007310) J (XQ410B0)  
HP (NX007260) U,C,E (XQ41020)  
MVR (NX007320) J (XQ410B0)  
MVR (NX007270) U,C,E (XQ41020)  
PSW (NX007330) J (XQ410B0)  
PSW (NX007280) U,C,E (XQ41020)
- PSR-320 & PSR-420
- IC  
IC 101: HD6413002FP16 (XQ375A00)  
CPU <H8/3002>  
IC 102: IC-PST993C-T (XQ693A00) RESET  
IC 103: TC74HC14AP (IR001400) S-INVERTER  
IC 201: UPC27C80010 (XR007A00) :ROM 8M  
(PROGRAM): PSR-320  
UPC27C80010 (XR008A00) :ROM 8M  
(PROGRAM): PSR-420  
IC 202: W24257-70LL (XQ696A00) SRAM 256K  
IC 203: TC74AC32P (XG658A00) OR  
IC 301: YMW258B-F (XQ200A00) GEW85  
IC 302: MX23C1610PC-12 (XQ697A00) MASKED ROM 16M  
IC 401: PCM69AP-3 (XM051A00) DAC  
IC 402: AN8005-(FTA)+5V (XP515A00) REGULATOR +5V  
IC 403-405: UPC4570HA (XB247A00) OP AMP  
IC 501-503: TC74HC174AP (IR017400) D-FF  
IC 504: TC74HC04AP (IR000400) INVERTER  
IC 901: LA4705 (XM593A00) POWER AMP 15W  
IC 902: PQ05RA1 (XL450A00) REGULATOR +5V  
IC 903: S-81250PG-T (XM993A00) REGULATOR +5V
  - Transistor  
TR 501,502, 801,802: 2SC1815 Y,GR (IC1815M0)  
TR 503-505: 2SA(3CG)881Q (VQ175600) or DTB113ZS  
TR 506: 2SA(3CG)881Q (VQ175600) or DTB113ZS: PSR-420 only  
When digital transistor, DTB113ZS is used as TR 503-TR505, jumper wire is installed to R567, R568, R569, R570, R571, R572, R573 and R574.
  - Transistor Array  
TA 501,502: ULN2803A (VI707900): PSR-420 only
  - Diode  
D 101,401, 402,801: 1SS133,1SS176 (VB941200)  
D 802,901: 20E1-FC4 (VL723600)
  - Photo Coupler  
PC 801: PC-900V (VG181900)
  - Myler Capacitor  
C 421,422: 0.0560 50V J (UA654560)  
C 425,426: 0.0220 50V J (UA654220)  
C 915-918: 0.0470 50V J (UA654470)
  - Ceramic Capacitor  
C 411-414: B 220P 50V K (FG612220)  
C 423,424: B 180P 50V K (FG612180)  
C 801,803: F 0100 50V Z (FG644100)  
C 903,904: B 1200P 50V K (FG613120)  
C 905,906: B 470P 50V K (FG612470)  
C 909,910: SL 47P 50V J (FG611470)
  - Ceramic Capacitor Array  
CA 101,501, 502,504: 470P 50V M (VH285600)  
CA 102,503: 470P X12 (VT487100)
  - Electrolytic Cap.  
C 102,105,112, 302,402,404, 926: 100.00 10.0V (UI528100)  
C 403,907,908: 1.00 50.0V (UJ866100)  
C 405,406,409, 410: 10.00 16.0V (UI537100)  
C 407,408: 4.70 50.0V (UI566470)  
C 416,912,929: 100.00 10.0V (UJ828100)  
C 419,420: BP 10.00 16.0V (UN83710)  
C 501: 1000 6.3V (UJ819100)  
C 901,902: 10.00 16.0V (UJ837100)  
C 911: 33.00 16.0V (UJ837330)  
C 913,925,928: 100.00 25.0V (UJ848100)  
C 919,920: 47.00 16.0V (UJ837470)  
C 923: 4700 25.0V (UJ749470)  
C 930: 470.00 16.0V (UJ838470)

- Notes)
- Circuit Board: MKS (VQ305200) X
- IC : HD63B05V0D73P
  - Ceramic Capacitor : SL 22P 50V J (VD)  
: F 47000P 16V Z (V)
  - Electrolytic Cap. : 100.00 10.0V (UJ8)
  - Carbon Resistor : 4.7K 1/4 J (HF7564)  
: 47.0K 1/4 J (HF757)
  - Resistor Array : RGL12X223J (VL)
  - Coil : BL03RN2-R62T4 0.
  - Ceramic Resonator



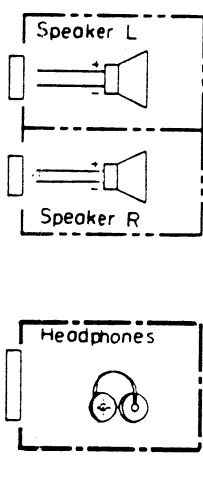
- IC901: LA4705 (XM593A00) POWER AMP 15W  
 IC902: PQ05RA1 (XL450A00) REGULATOR +5V  
 IC903: S-81250PG-T (XM993A00) REGULATOR +5V
2. Transistor  
 TR 501,502, 801,802: 2SC1815 Y,GR (IC1815M0)  
 TR 503-505: 2SA(3CG)881Q (VQ175600) or DTB113ZS  
 TR 506: 2SA(3CG)881Q (VQ175600) or DTB113ZS: PSR-420 only  
*When digital transistor, DTB113ZS is used as TR 503-TR505, jumper wire is installed to R567, R568, R569, R570, R571, R572, R573 and R574.*
3. Transistor Array  
 TA 501,502: ULN2803A (VI707900): PSR-420 only
4. Diode  
 D 101,401, 402,801: 1SS133,1SS176 (VB941200)  
 D 802,901: 20E1-FC4 (VL723600)
5. Photo Coupler  
 PC 801: PC-900V (VG181900)
6. Mylar Capacitor  
 C 421,422: 0.0560 50V J (UA654560)  
 C 425,426: 0.0220 50V Z (UA654220)  
 C 915-918: 0.0470 50V J (UA654470)
7. Ceramic Capacitor  
 C 411-414: B 220P 50V K (FG612220)  
 C 423,424: B 180P 50V K (FG612180)  
 C 801,803: F 0.0100 50V Z (FG644100)  
 C 903,904: B 1200P 50V K (FG613120)  
 C 905,906: B 470P 50V K (FG612470)  
 C 909,910: SL 47P 50V J (FG611470)
8. Ceramic Capacitor Array  
 CA 101,501, 502,504: 470P 50V M (VH285600)  
 CA 102,503: 470P X12 (VT487100)
9. Electrolytic Cap.  
 C 102,105,112, 302,402,404, 926: 100.00 10.0V (UI528100)  
 C 403,907,908: 1.00 50.0V (UJ866100)  
 C 405,406,409, 410: 10.00 16.0V (UI537100)  
 C 407,408: 4.70 50.0V (UI566470)  
 C 416,912,929: 100.00 10.0V (UJ828100)  
 C 419,420: BP 10.00 16.0V (UN83710)  
 C 501: 1000 6.3V (UJ819100)  
 C 901,902: 10.00 16.0V (UJ837100)  
 C 911: 33.00 16.0V (UJ837330)  
 C 913,925,928: 100.00 25.0V (UJ848100)  
 C 919,920: 47.00 16.0V (UJ837470)  
 C 923: 470.00 25.0V (UJ749470)  
 C 930: 470.00 16.0V (UJ838470)

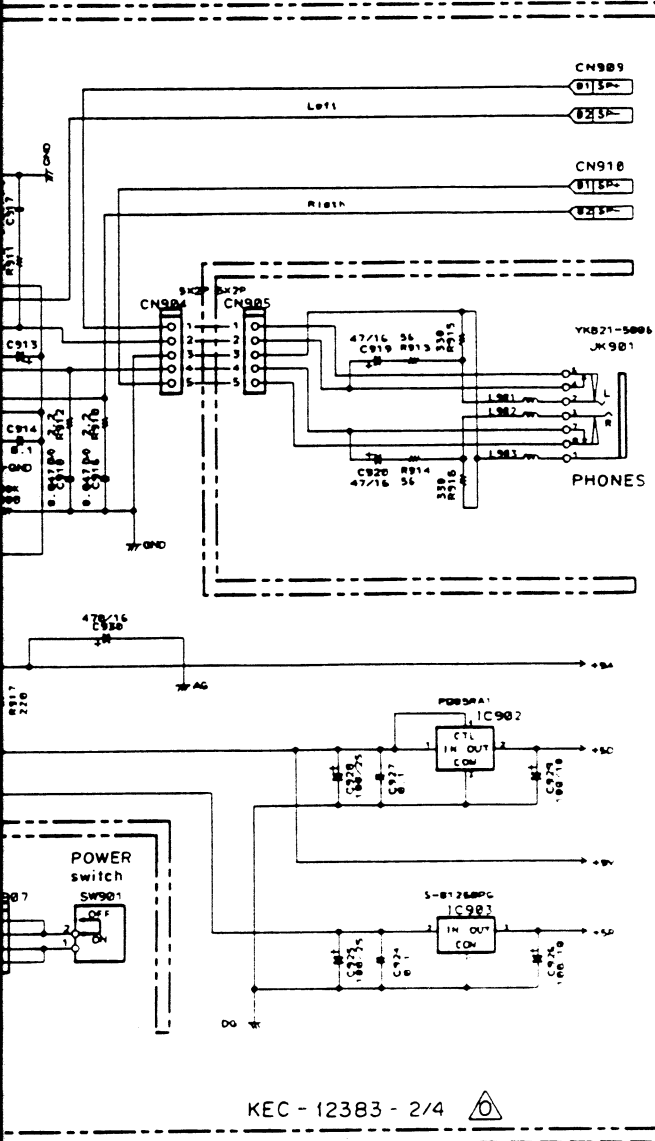
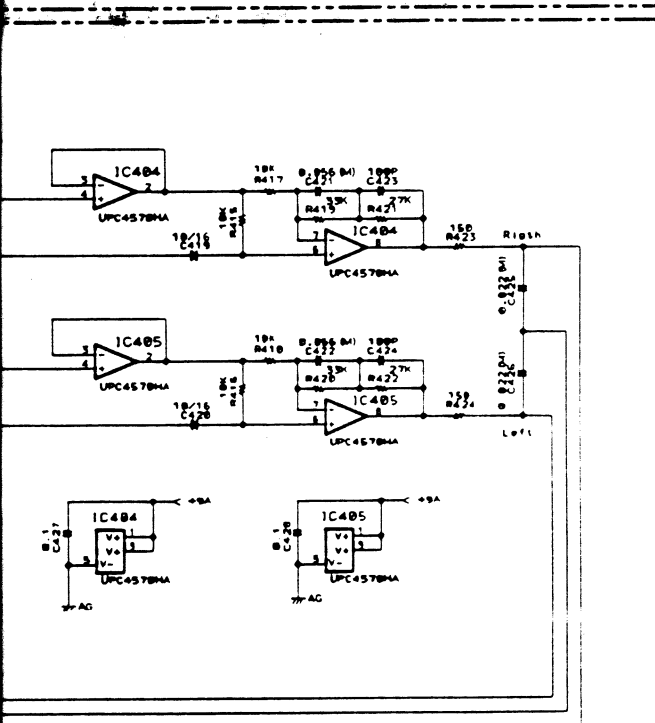
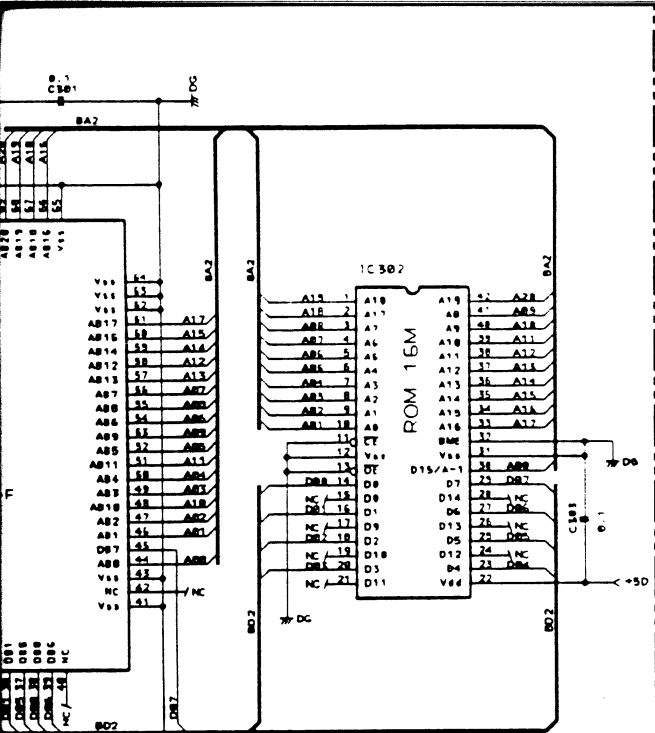
Notes

- Circuit Board: MKS (VQ3)
- IC : HD63B05V
  - Ceramic Capacitor : SL 22P 50V F 47000P
  - Electrolytic Cap. : 100.00 10V
  - Carbon Resistor : 4.7K 1/4 J 47.0K 1/4 J
  - Resistor Array : RGL12X2
  - Coil : BL03RN2-F
  - Ceramic Resonator : CST8.00M 8.00M EFC
  - Connector : 52147-6P T 52147-11P 52147-12P
  - Wire Trap : 52147-11P 52147-12P

Notes

- Circuit Board: MK (VM894)
- Diode : IN4148TY-F





IC 901: LA4705 (XM553A00) POWER AMP +5V  
IC 902: PQ05RA1 (XL450A00) REGULATOR +5V  
IC 903: S-81250PG-T (XM993A00) REGULATOR +5V

2 Transistor  
TR 501,502, 801,802: 2SC1815 Y,GR (IC1815M0)  
TR 503-505: 2SA(3CG)881Q (VQ175600) or DTB113ZS  
TR 506: 2SA(3CG)881Q (VQ175600) or DTB113ZS: PSR-420 only  
When digital transistor, DTB113ZS is used as TR 503-TR505, jumper wire is installed to R567, R568, R569, R570, R571, R572, R573 and R574.

3 Transistor Array  
TA 501,502: ULN2803A (V1707900): PSR-420 only

4 Diode  
D 101,401, 402,801: 1SS133,1SS176 (VB941200)  
D 802,901: 20E1-FC4 (VL723600)

5 Photo Coupler  
PC 801: PC-900V (VG181900)

6 Mylar Capacitor  
C 421,422: 0.0560 50V J (UA654560)  
C 425,426: 0.0220 50V J (UA654220)  
C 915-918: 0.0470 50V J (UA654470)

7 Ceramic Capacitor  
C 411-414: B 220P 50V K (FG612220)  
C 423,424: B 180P 50V K (FG612180)  
C 801,803: F 0.0100 50V Z (FG644100)  
C 903,904: B 1200P 50V K (FG613120)  
C 905,906: B 470P 50V K (FG612470)  
C 909,910: SL 47P 50V J (FG611470)

8 Ceramic Capacitor Array  
CA 101,501, 502,504: 470P 50V M (VH285600)  
CA 102,503: 470P X12 (VT487100)

9 Electrolytic Cap.  
C 102,105,112, 302,402,404, 926: 100.00 10.0V (UI528100)  
C 403,907,908: 1.00 50.0V (UJ866100)  
C 405,406,409, 410: 10.00 16.0V (UI537100)  
C 407,408: 4.70 50.0V (UI566470)  
C 416,912,929: 100.00 10.0V (UJ828100)  
C 419,420: BP 10.00 16.0V (UN83710)  
C 501: 1000 6.3V (UJ819100)  
C 901,902: 10.00 16.0V (UJ837100)  
C 911: 33.00 16.0V (UJ837330)  
C 913,925,928: 100.00 25.0V (UJ848100)  
C 919,920: 47.00 16.0V (UJ837470)  
C 923: 4700 25.0V (UJ749470)  
C 930: 470.00 16.0V (UJ838470)

R 568, R568, R570 and R572:  
R 572: 1.0K 1/4 J (HF756100): PSR-420 only  
R 573: 10.0K 1/4 J (HF757100): PSR-420 only  
R 804: 270.0 1/4 J (HF755270)  
R 806,808: 22.0K 1/4 J (HF757220)  
R 903,904: 15.0K 1/4 J (HF757150)  
R 909-912: 2.2 1/4 J (HF753220)  
R 913,914: 56.0 1/4 J (HF854560)

12 Resistor Array  
RA 501: RGL8X103J (VF771900)

13 Rotary Variable Resistor  
VR 901: A10Kx2 (VQ320200) MASTER VOLUME

14 Line Filter  
L 904: SU10VD-10020 (VH227500)

15 Coil  
L 101,102,801-809,901-903: FL5R200QN 20u (VB971100)

16 Ceramic Resonator  
CR 101: 16.0M EFOEC1605T4 (VT487200) or 16.0M CST16.00M (VT630600)  
CR 301: 9.40M CST9.40MTW (VJ338000)

19 Push Switch  
SW 901: SDDL81 (VQ670600) POWER switch

20 Phone Jack  
JK 801: YKB21-5012 BL (VB312600) SUSTAIN  
JK 901: YKB21-5006 (LB101870) PHONES

21 DIN Connector  
JK 802,803: 5P YKF51-5050 (VJ107200) MIDI IN,OUT

22 DC IN Connector  
JK 804: HEC2305 (VC664500) DC IN 10-12V

23 Cable Holder  
CN 102,801: 51048-7P TE (VI878500)  
CN 802,901: 51048-6P TE (VI878400)  
CN 902-905: 51048-5P TE (VI878300)  
CN 906,907: 51048-4P TE (VI878200)

24 Wire Trap  
CN 101: 52151-14P SE (VK02730)  
CN 103,802: 52151-6P SE (VK026500)  
CN 501,502: 52151-8P SE (VK026700): PSR-420 only  
CN 503,504: 52151-4P SE (VK026300): PSR-420 only  
CN 505: 52151-10P SE (VK02690)  
CN 506: 52147-7P TE (VK025100)  
CN 801: 52151-7P SE (VK026600)

25 Connector  
CN 507: PSB4D30-2 (VT40210)

26 Connector Assembly  
W1: VR 5P (VT39810) CN902-CN903  
W2: HP 5P (VT39820) CN904-CN905  
W3: SW 4P (VT39830) CN906-CN907  
W4: PS 6P (VT73070) CN802-CN901  
W5: JK 7P (VT73080) CN102-CN801  
W6: JP 8P (VT71710) CNJ1-CNJ2  
W7: ROM2 (VT71720)

27 Jumper Wire  
J 201: not installed  
J 202: installed  
J 501-503: installed: PSR-320 only

#### Notes

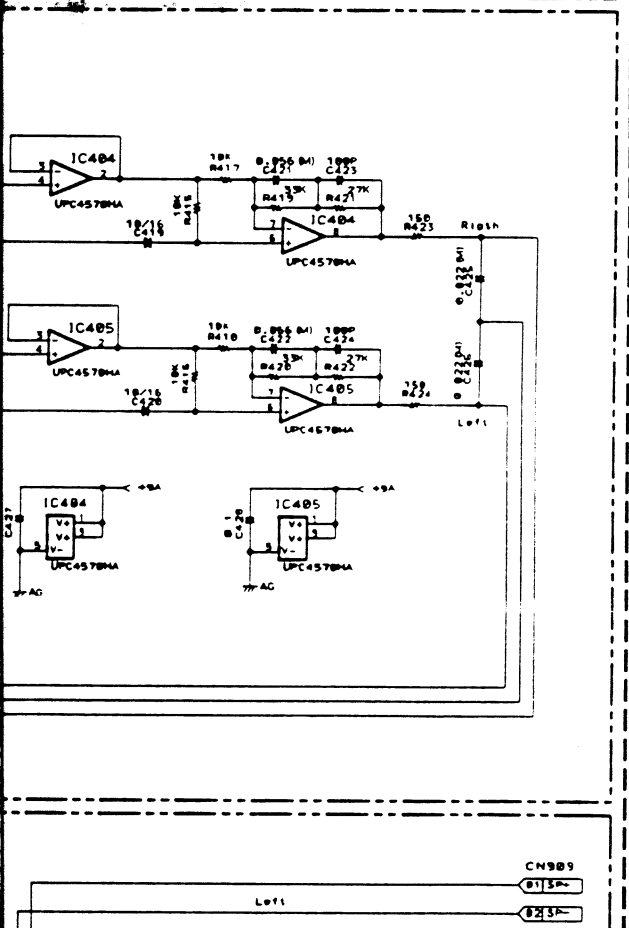
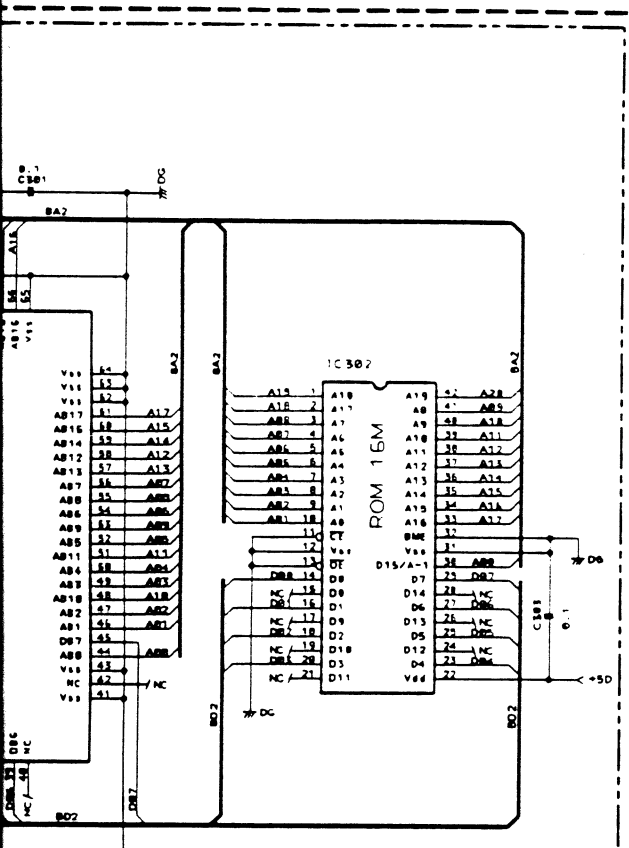
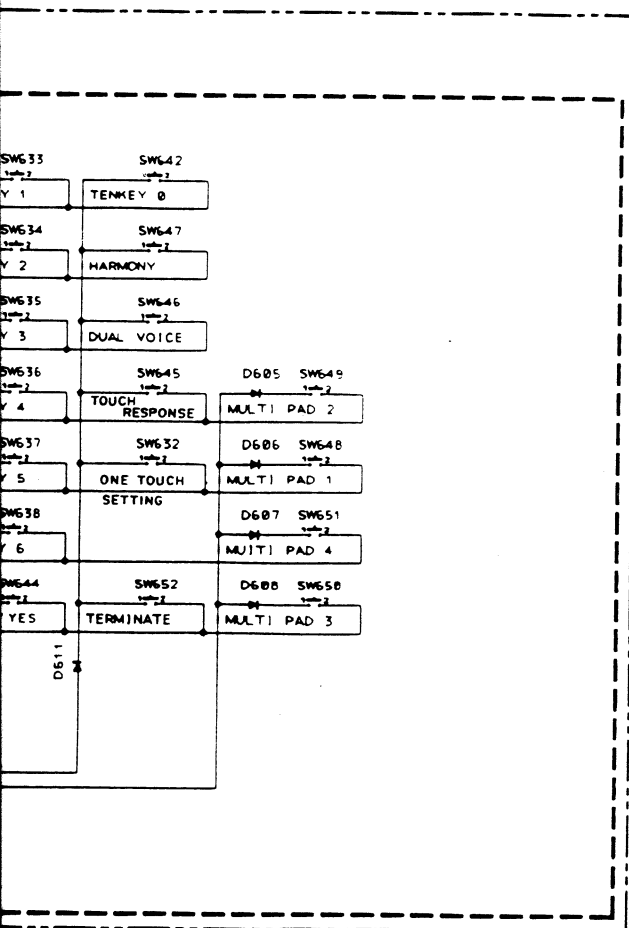
Circuit Board: MKS (VQ305200) XM324A0

- IC: HD63B05V0D73P (XJ450A00) CPU
- Ceramic Capacitor: SL 22P 50V J (VD840500)  
F 47000P 16V Z (VK392400)
- Electrolytic Cap.: 100.00 10.0V (UJ828100)
- Carbon Resistor: 4.7K 1/4 J (HF756470)  
47.0K 1/4 J (HF757470)
- Resistor Array: RGL12X223J (VL674500)
- Coil: BL03RN2-R62T4 0.45 (VL409500)
- Ceramic Resonator: CST8.00MTW140 (VN002100)  
8.00M EFOEC8004T3 (VQ305500)
- Connector: 52147-6P TE (VF728300)
- Wire Trap: 52147-11P TE (VK025500)  
52147-12P TE (VK025600)

#### Notes

Circuit Board: MK (VM894200) (VQ32760)

- Diode: IN4148TY-P=20 (VM893900)



## Notes)

## PSR-320

Circuit Board: M (NX007170) J (XQ410C0)  
 M (NX007120) U,C,E (XQ41030)  
 JACK (NX007180) J (XQ410C0)  
 JACK (NX007130) U,C,E (XQ41030)  
 HP (NX007190) J (XQ410C0)  
 HP (NX007140) U,C,E (XQ41030)  
 MVR (NX007200) J (XQ410C0)  
 MVR (NX007150) U,C,E (XQ41030)  
 PSW (NX007210) J (XQ410C0)  
 PSW (NX007160) U,C,E (XQ41030)

## PSR-420

Circuit Board: M (NX007290) J (XQ410B0)  
 M (NX007240) U,C,E (XQ41020)  
 JACK (NX007300) J (XQ410B0)  
 JACK (NX007250) U,C,E (XQ41020)  
 HP (NX007310) J (XQ410B0)  
 HP (NX007260) U,C,E (XQ41020)  
 MVR (NX007320) J (XQ410B0)  
 MVR (NX007270) U,C,E (XQ41020)  
 PSW (NX007330) J (XQ410B0)  
 PSW (NX007280) U,C,E (XQ41020)

## PSR-320 &amp; PSR-420

## 1. IC

IC 101: HD6413002FP16 (XQ375A00)  
 CPU <H8/3002>  
 IC 102: IC-PST993C-T (XQ693A00) RESET  
 IC 103: TC74HC14AP (IR001400) S-INVERTER  
 IC 201: UPC27C80010 (XR007A00) ROM 8M  
 (PROGRAM): PSR-320  
 IC 201: UPC27C80010 (XR008A00) ROM 8M  
 (PROGRAM): PSR-420  
 IC 202: W24257-70LL (XQ696A00) SRAM 256K  
 IC 203: TC74AC32P (XG658A00) OR  
 IC 301: YMW258B-F (XQ200A00) GEW8S  
 IC 302: MX23C1610PC-12 (XQ697A00) MASKED  
 ROM 16M  
 IC 401: PCM69AP-3 (XM051A00) DAC  
 IC 402: AN8005-(FTA)+5V (XP515A00)  
 REGULATOR +5V  
 IC 403-405: UPC4570HA (XB247A00) OP AMP  
 IC 501-503: TC74HC174AP (IR017400) D-FF  
 IC 504: TC74HC04AP (IR000400) INVERTER  
 IC 901: LA4705 (XM593A00) POWER AMP 15W  
 IC 902: PQ05RA1 (XL450A00) REGULATOR +5V  
 IC 903: S-81250PG-T (XM993A00) REGULATOR  
 +5V

## 2. Transistor

TR 501,502: 2SC1815 Y,GR (IC1815M0)  
 801,802: 2SA(3CG)881Q (VQ175600) or DTB113ZS  
 TR 503-505: 2SA(3CG)881Q (VQ175600) or DTB113ZS  
 TR 506: 2SA(3CG)881Q (VQ175600) or DTB113ZS  
 PSR-420 only  
 When digital transistor, DTB113ZS is used  
 as TR 503-TR505, jumper wire is installed to  
 R567, R568, R569, R570, R571, R572,  
 R573 and R574.

## 3. Transistor Array

TA 501,502: ULN2803A (V1707900): PSR-420 only

## 4. Diode

D 101,401: 1SS133,1SS176 (VB941200)  
 D 802,901: 20E1-FC4 (VL723600)

## 5. Photo Coupler

PC 801: PC-900V (VG181900)

## 6. Mylar Capacitor

C 421,422: 0.0560 50V J (UA654560)  
 C 425,426: 0.0220 50V J (UA654220)  
 C 915-918: 0.0470 50V J (UA654470)

## 7. Ceramic Capacitor

C 411-414: B 220P 50V K (FG612220)  
 C 423,424: B 180P 50V K (FG612180)  
 C 801,803: F 0.0100 50V Z (FG644100)  
 C 903,904: B 1200P 50V K (FG613120)  
 C 905,906: B 470P 50V K (FG612470)  
 C 909,910: SL 47P 50V J (FG611470)

## 8. Ceramic Capacitor Array

CA 101,501: 502,504: 470P 50V M (VH285600)  
 CA 102,503: 470P X12 (VT487100)

## 9. Electrolytic Cap.

C 102,105,112, 302,402,404, 926: 100.00 10.0V (UI528100)  
 C 403,907,908: 1.00 50.0V (UJ866100)  
 C 405,406,409, 410: 10.00 16.0V (UI537100)  
 C 407,408: 4.70 50.0V (UI566470)  
 C 416,912,929: 100.00 10.0V (UJ828100)  
 C 419,420: BP 10.00 16.0V (UN83710)  
 C 501: 1000 6.3V (UJ819100)  
 C 901,902: 10.00 16.0V (UJ837100)  
 C 911: 33.00 16.0V (UJ837330)  
 C 913,925,928: 100.00 25.0V (UJ848100)  
 C 919,920: 47.00 16.0V (UJ837470)  
 C 923: 4700 25.0V (UJ749470)  
 C 930: 470.00 16.0V (UJ838470)

## 10. Semiconductive Cera. Cap.

C 101,103,104, 106-108,110, 111,113,201- 203,301,303, 401,415,427, 428,502-504, 802,914,921,922, 924,927: 0.1000 25V Z (VC694800)  
 C 505-507: 0.1000 25V Z (VC694800): PSR-420 only

## 11. Carbon Resistor

R 101,103,521, 908: 100.0K 1/4 J (HF758100)  
 R 102,413-418, 522,567,569, 571,802,807, 907: 10.0K 1/4 J (HF757100)

When digital transistor, DTB113ZS is used  
 as TR 503-TR505, jumper wire is installed to  
 R567, R569, R571 and R573.

R 104: 390.0K 1/4 J (HF858390)  
 R 105: 220.0K 1/4 J (HF758220)  
 R 108,109,563, 565,801,803: 47.0K 1/4 J (HF757470)  
 R 111: 820.0 1/4 J (HF755820)  
 R 112,805,809, 810,917,918: 220.0 1/4 J (HF755220)  
 R 113,519,520: 22.0 1/4 J (HF754220)  
 R 401,402,405, 406: 560.0 1/4 J (HF755560)  
 R 403,404,915, 916: 330.0 1/4 J (HF755330)  
 R 407,408: 2.7K 1/4 J (HF756270)  
 R 409-412: 6.8K 1/4 J (HF756680)  
 R 419,420: 33.0K 1/4 J (HF757330)  
 R 421,422,901, 902: 27.0K 1/4 J (HF757270)  
 R 423,424: 150.0 1/4 J (HF755150)  
 R 501-516: 68.0 1/4 J (HF854680): PSR-420 only  
 R 517,518: 68.0 1/4 J (HF854680)  
 R 523-559: 82.0 1/4 J (HF854820)  
 R 562,564,905, 906: 2.2K 1/4 J (HF756220)  
 R 566,568,570: 1.0K 1/4 J (HF756100)

When digital transistor, DTB113ZS is used  
 as TR 503-TR505, jumper wire is installed to  
 R566, R568, R570 and R572.

R 572: 1.0K 1/4 J (HF756100): PSR-420 only  
 R 573: 10.0K 1/4 J (HF757100): PSR-420 only  
 R 804: 270.0 1/4 J (HF755270)  
 R 806,808: 22.0K 1/4 J (HF757220)  
 R 903,904: 15.0K 1/4 J (HF757150)  
 R 909-912: 2.2 1/4 J (HF753220)  
 R 913,914: 56.0 1/4 J (HF854560)

## 12. Resistor Array

RA 501: RGL8X103J (VF771900)

## 13. Rotary Variable Resistor

VR 901: A10Kx2 (VQ320200) MASTER VOLUME

## 14. Line Filter

L 904: SU10VD-10020 (VH227500)

## 15. Coil

L 101,102,801- 809,901-903: FL5R200QN 20u (VB971100)

## 16. Ceramic Resonator

CR 101: 16.0M EF0EC1605T4 (VT487200) or  
 16.0M CST16.00M (VT630600)  
 CR 301: 9.40M CST9.40MTW (VJ338000)

## 19. Push Switch

SW 901: SDDL81 (VQ670600) POWER switch

## 20. Phone Jack

JK 801: YKB21-5012 BL (VB312600) SUSTAIN  
 JK 901: YKB21-5006 (LB101870) PHONES

## 21. DIN Connector

JK 802,803: 5P YKF51-5050 (VJ107200) MIDI IN,OUT

## 22. DC IN Connector

JK 804: HEC2305 (VC664500) DC IN 10-12V

## 23. Cable Holder

CN 102,801: 51048-7P TE (V1878500)  
 CN 802,901: 51048-6P TE (V1878400)  
 CN 902-905: 51048-5P TE (V1878300)  
 CN 906,907: 51048-4P TE (V1878200)

## 24. Wire Trap

CN 101: 52151-14P SE (VK02730)  
 CN 103,802: 52151-6P SE (VK026500)  
 CN 501,502: 52151-8P SE (VK026700): PSR-420 only  
 CN 503,504: 52151-4P SE (VK026300): PSR-420 only  
 CN 505: 52151-10P SE (VK02690)  
 CN 506: 52147-7P TE (VK025100)  
 CN 801: 52151-7P SE (VK026600)

## 25. Connector

CN 507: PSB4D30-2 (VT40210)

## 26. Connector Assembly

W1: VR 5P (VT39810) CN902-CN903  
 W2: HP 5P (VT39820) CN904-CN905  
 W3: SW 4P (VT39830) CN906-CN907  
 W4: PS 6P (VT73070) CN802-CN901  
 W5: JK 7P (VT73080) CN102-CN801  
 W6: JP 8P (VT71710) CNJ1-CNJ2  
 W7: ROM2 (VT71720)

## 27. Jumper Wire

J 201: not installed  
 J 202: installed  
 J 501-503: installed: PSR-320 only

## Notes)

Circuit Board: MKS (VQ305200) XM324A0

## 1. IC

HD63B05V0D73P (XJ450A00) CPU

## 2. Ceramic Capacitor

SL 22P 50V J (VD840500)  
 F 47000P 16V Z (VK392400)

## 4. Electrolytic Cap.

100.00 10.0V (UJ828100)

## 5. Carbon Resistor

4.7K 1/4 J (HF756470)  
 47.0K 1/4 J (HF757470)

## 6. Resistor Array

RGL12X223J (VL674500)

## 7. Coil

BL03RN2-R62T4 0.45 (VL409500)

## 8. Ceramic Resonator